



KENYA *10-Year* INNOVATION MASTERPLAN



Acknowledgements

The Kenya 10-year innovation masterplan is an initiative of the Kenya National Innovation Agency (KeNIA) in the execution of its mandate to develop, coordinate and manage the national innovation ecosystem.

This document is intended to provide an assessment of the current state of the national innovation ecosystem and provide a roadmap on KeNIA's vision for the growth of the ecosystem over the next 10 years.

This roadmap is intended to coalesce the stakeholders around a common mission and goals for the national innovation ecosystem. This masterplan is the output of a participatory process that engaged diverse stakeholders across the country.

We would like to acknowledge the KeNIA board of directors whose guidance was instrumental to the development of this masterplan. We acknowledge some of the extensive work done by development

partners who have invested their time and resources to understanding various aspects of the current national innovation ecosystem. The outputs of these efforts provided a good foundation for the development of this 10-year masterplan.

We are grateful for the support of the Government of Kenya under the leadership of the President of the Republic of Kenya. We were also inspired by the Government of the United Kingdom and other countries, who have walked this journey before and developed a national innovation masterplan.

The masterplan has benefited immensely from the contributions of several other technical and development partners who have been implementing complementary programmes within the national innovation ecosystem. We would like to acknowledge and thank all stakeholders who took the time to share their experience for the development of this masterplan.

“We are grateful for the support of the Government of Kenya under the leadership of the President of the Republic of Kenya.”

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Foreword

**H.E. HON. WILLIAM SAMOEI RUTO
PHD., C.G.H**

*President of the Republic of Kenya and
Commander in Chief of the Kenya Defense Forces*

Sixty (60) years since our independence, we are now more a part of the global community than ever before. A community that is experiencing rapid evolution because of emerging technologies such as artificial intelligence (AI), more integrated and globally competitive, recovering from a global pandemic and is focused on meeting the challenges of climate change.

To play our role within this global community and to prepare for the future, we must place innovation front and center of everything we do. We must adopt novel ways of thinking and implementation to enable us to succeed in the present and be ready for the future.

To achieve these goals, we need to establish a robust knowledge economy in all our economic sectors. This knowledge economy needs to be established in an environment that allows for open generation and exchange of ideas. We would also have to avail ourselves of the resources needed for these ideas to flourish and generate commercial and developmental value for our country. Key among these resources should be a skilled pool of human capital.

We must therefore equip our people with the skills to innovate, the confidence to implement these ideas and the resources to obtain the full potential of their ideas. This is especially important for our young people who require such skills to obtain decent jobs in a competitive global job market.

This 10-year masterplan represents Kenya's aspiration to create an even more globally competitive knowledge economy. A knowledge economy that will leverage the collective knowledge and expertise of all stakeholders through a well-managed national innovation ecosystem to position Kenya as a stronger player in the global knowledge economy.

As a nation, we have made considerable progress in several sectors essential to the successful implementation of this masterplan. We have a robust digital economy sector that is built on an extensive network of mobile, terrestrial and sub-sea infrastructure that provides connectivity. We have an inclusive financial services sector that is admired globally and that continues to innovate. Finally, we have established an agency whose core mandate is to coordinate the national innovation ecosystem.

My government is committed to making Kenya an innovation leader and position us as an attractive investment destination for investors. Through this masterplan we will put in place measures to promote local innovation.

I welcome all government ministries, the private sector, academia, development partners and all other stakeholders to engage the Kenya National Innovation Agency and contribute towards the realization of this 10-year masterplan.

“ *Qualified human resources are essential to our ongoing efforts to transform Kenya into a middle-income country that provides a high quality of life to all its citizens by the year 2030.* ”

Preamble

HON. ABABU

NAMWAMBA, EGH

*Cabinet Secretary, Ministry of Youth Affairs,
Creative Economy and Sports*



Kenya is a youthful country, 75 per cent of our population is below the age of 35. This demographic dividend offers an opportunity to propel the nation's development forward. To achieve this, the government is committed to establishing a robust economy that can create sufficient decent jobs for the youth.

A systemic adoption of innovation across our economy can create novel opportunities for job creation in the country. However, the formal economy cannot create sufficient jobs to meet our current demand for jobs. It is therefore important that we create an innovation culture that would encourage our young people to venture into entrepreneurship. This will help them develop a higher level of self-reliance and potentially create more jobs for their peers.

This 10-year focuses on the essential pillars of policy, access to finance, infrastructure, human capital and access to markets. To ensure the long-term sustainability of our national innovation ecosystem and its outputs, it is important that we identify the growth opportunities within these pillars and provide a clear path forward. The masterplan provides a roadmap and highlights the government's intentions towards institutionalizing innovation and the roles of the different stakeholders.

The government has already taken some measures towards the attainment of this goal. The adoption of a digital economy blueprint is one such measure. The digital economy blueprint proposes innovation-driven entrepreneurship as one of its pillars. Secondly, the Ajira digital program is preparing our young people for the global gig-economy by giving them relevant skills and providing linkages to potential employers. Thirdly, we have established a digital marketplace called the Kenya Innovation Bridge. This platform provides opportunities for innovators to meet partners, funders, investors and potential consumers. Finally, we have established countrywide centers of innovation that include the county innovation hubs and studio mashinani initiatives.

I would like to invite private sectors, development partners and international organizations to engage Kenya National Innovation Agency and explore areas of partnership to realize the vision of this masterplan. As we continue to create a vibrant national innovation ecosystem, that is recognised and admired globally, I would encourage all stakeholders within the ecosystem to continue to push boundaries for its by focused determination that we achieve collective greater good.



Message From: Chairperson KeNIA

PROF. TOM MIGUN OGADA
*Board Chair, Kenya National
Innovation Agency*

There are only seven years left until 2030, a milestone by which we as a country are expected to have achieved the aspirations of the Sustainable Development Goals (SDGs) and those of Kenya's Vision 2030. To be successful, there is a lot to be done in the coming years.

We therefore must intentionally intensify our efforts towards achieving these goals. Innovation is a driver that would enable us to achieve these objectives. As KeNIA we remain committed to our mandate to catalyse a vibrant national innovation ecosystem that would contribute towards the nation's socio-economic goals.

This 10-year innovation masterplan reflects this commitment by providing a strategic direction for all stakeholders in the ecosystem. The Global Innovation Index highlights that Kenya is competitive at the Sub-Saharan Africa regional level but that we still have some work to do to be more competitive at the global level.

This document has attempted to capture our approach to addressing some of the aspects that would help us bridge this gap. This includes addressing the significant funding gap for start-ups in Kenya. Though some of our start-ups have raised significant amounts of funding, more capital is needed to meet the sustainability needs of enterprises

and enterprise support organizations (ESOs) across the country.

The regional economic communities that Kenya is a member of offer large common markets whose demands our inventions could seek to address. The East Africa Community (EAC) and the Africa Continental Free Trade Area (AfCFTA) will create opportunities for Kenyan innovators to access alternative rapidly growing markets on the continent.

We therefore must ensure that our national innovation ecosystem produces solutions not only for the Kenyan market but with the larger regional and global markets in mind. This masterplan is an integral part of our ongoing efforts to increase the capacity of the national innovation ecosystem. We intend to continue to develop an ecosystem that will set the standard for what is possible when stakeholders work together towards a common goal.

I am confident that through the implementation of this masterplan we can significantly contribute towards the nation's Gross Domestic Product (GDP), improve the quality of life of our citizens, create decent jobs for our young people and enhance the competitiveness of the country.



Message From: CEO KeNIA

DR. TONNY OMWANSA

CEO,

Kenya National Innovation Agency

Successful socio-economic development through innovation requires the collective efforts of stakeholders across the innovation ecosystem. As a catalyzing agency for the national innovation ecosystem our role is to ensure that these stakeholders receive the support that they need to innovate within their spaces and to collate these efforts towards the national priorities.

This innovation masterplan intends to offer a roadmap of our priorities for the national innovation ecosystem over the next 10 years. It has attempted to capture the aspirations of stakeholders across our ecosystem through a participatory process that was adopted throughout the development process. The masterplan has sought to be adaptive to a continuously evolving ecosystem.

Over the last few years emerging technologies have introduced new capabilities that are transforming the way we live, learn, work and transact. The Covid-19 pandemic accelerated digitization across multiple sectors, a development that has increased the potential for collaboration within the ecosystem. These developments have reignited conversations around regulation at the national and county levels that will increase the potential of the ecosystem to meet the expectations of all stakeholders.

This 10-year masterplan has built on the baseline set by Kenya Innovation Outlook Report that we launched at the Kenya Innovation week 2022. We have focused on select pillars that are important to innovation at all levels of society. Pillars that are necessary to promote the ideation, growth and sustainability of relevant innovation across the ecosystem. By increasing the innovation capacity of the ecosystem, we are increasing the

potential of achieving the political, social and economic goals set out in Kenya Vision 2030. We hope that this document will provide the necessary confidence in the national innovation ecosystem for stakeholders to actively engage in the pursuit of the nation's socio-economic development through innovation.

This 10-year masterplan considered global best practices from other mature innovation ecosystems and contextualized these for our ecosystem. We hope that in addition to its primary purpose this masterplan will also achieve some secondary goals. First, the masterplan is intended to be a yardstick by which we will track the progress within the national innovation ecosystem. Secondly, we hope that it would have an educative impact on the ecosystem stakeholders and help create awareness on how KeNIA aspires to provide leadership and coordination towards a more vibrant national innovation ecosystem.

Finally, we hope the masterplan will be inspirational and aspirational to help stakeholders visualize the focus and achievements in the immediate near future. In the process we hope to give a level of confidence to the stakeholders in the ecosystem of our long-term commitment towards a strong national innovation ecosystem.

We will experiment and learn from approaches that are responsive to the needs of our ecosystem. We intend to utilize a continuous monitoring and evaluation process to track the progress on the implementation of this masterplan and review this living document. We look forward to working with all of you over the next 10 years in implementing this masterplan.

Abbreviations

| Abbreviation | Meaning |
|--------------|--|
| AfCFTA | Africa Continental Free Trade Area |
| AFDB | African Development Bank |
| ASAL | Arid and Semi Arid Lands |
| CBC | Competency Based Curriculum |
| CMA | Capital Markets Authority |
| COMESA | Common Market for East and Southern Africa |
| EAC | East Africa Community |
| FSD | Financial Sector Deepening |
| GDP | Gross Domestic Product |
| GII | Global Innovation Index |
| GoK | Government of Kenya |
| ICT | Information and Communication Technology |
| IP | Intellectual Property |
| KNBS | Kenya National Bureau of Statistics |
| KeNIA | Kenya National Innovation Agency |
| KEPROBA | Kenya Export Promotion and Branding Agency |
| KNEIL | Kenya Network of Entrepreneurial Institution Leaders |
| MSME | Micro, Small and Medium Enterprises |
| NACOSTI | National Commission for Science, Technology and Innovation |
| NGO | Non-Governmental Organization |
| NRF | National Research Fund |
| SACCO | Savings and Credit Cooperative Organizations |
| SSA | Sub-Saharan Africa |
| ST&I | Science Technology and Innovation |
| STEM | Science, Technology, Engineering and Math |
| TVET | Technical and Vocational Education and Training |
| UNDP | United Nations Development Program |
| USD | United States Dollar |
| WIPO | World Intellectual Property Organization |

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Executive Summary

Science, Technology & Innovation has been recognized as essential to the attainment of our nation's socio-economic development as envisioned by Kenya Vision 2030. This masterplan presents a framework approach towards the creation of a sustainable knowledge economy in Kenya to support the mission of transforming Kenya into an industrializing, middle income country providing a high quality of life to all its citizens by the year 2030.

A successful national innovation ecosystem is necessary for the development of a thriving knowledge economy. To be successful the national innovation ecosystem should rally its diverse stakeholders around a clear common vision and clear goals. This masterplan attempts to do so by presenting the country's priorities and approach to building a thriving national innovation ecosystem.

As a start this masterplan proposes adoption of the definition of innovation as "the creation of new or distinct improvements in formal or informal settings that have disruptive positive effects on the economy and the social well-being of the citizens."

The masterplan is organized into four (4) distinct sections.

Section 1: The "Introduction" section offers a summary of the importance of innovation to socio-economic development of a nation and offers a

justification for the development of this masterplan.

Section 2: The "Current Context" section describes the current condition of the national innovation ecosystem. The section introduces the five (5) pillars that the framework is built upon. These are human capital, access to finance, access to markets, infrastructure and policy pillars. Each pillar is briefly described as regards its relevance and current state within the national innovation ecosystem.

Section 3: The "Windows of Opportunities" section acknowledges some of the challenges that are present within the pillars and offers a perspective about how these challenges present unique windows of opportunity that the proposed framework can exploit.

Finally, *Section 4:* The "Way Forward" section introduces a framework that offers a systematic approach towards the establishment and coordination of a national innovation ecosystem.

The 5 pillars were identified as each plays an important role in enabling a thriving national innovation ecosystem. The participatory approach adopted in the development of this masterplan also highlighted that these pillars were common among and at the top of mind of majority of the stakeholders. The below table provides a summary of the pillars.

| Pillar | Description | Relevance |
|-------------------|--|---|
| Human Capital | This pillar refers to the efforts to develop relevant skills and experience for among the population for quality output production in the knowledge economy | Qualified human resources are a vital component of a successful knowledge economy. Development of accessible technical and managerial programs whose graduates would be better equipped to competitively participate in a global knowledge economy is essential to the success of the national innovation ecosystem. Improving the capacity of training institutions in the country to better support generation and commercialization of innovation is central to this pillar. |
| Access to Finance | This pillar refers to funding required to support the successful operation of the national innovation ecosystem. This includes the production and commercialization of the outputs of the knowledge economy. | Financial resources are essential to the sustainability of a knowledge economy. Capital is necessary for the funding of the development of infrastructure, commercialization operations, policy development and human capital development. Increasing the pool of funds available to stakeholders within the national innovation ecosystem is essential to the long-term success of the knowledge economy. |

| Pillar | Description | Relevance |
|-------------------|---|---|
| Access to Markets | This pillar refers to finding opportunities for generation of commercial value from the outputs of the knowledge economy. This includes finding, growing and maintaining commercial relationships | The success of the knowledge economy will depend on the ability to create new markets for the outputs of the national innovation ecosystem. Intentional efforts should be made to develop local market opportunities and to open regional and international markets for these outputs. This will include creating awareness of these commercial opportunities and ensuring the output meets the quality standards required to access these markets. |
| Infrastructure | This pillar refers to physical and virtual solutions that support the ability of actors within the knowledge economy to produce quality outputs | The importance of investment in solutions that support the acquisition, creation and dissemination of knowledge for economic development cannot be overstated. This includes physical infrastructure such as information, communication and technology (ICT) equipment and services that can interconnect the innovation ecosystem to promote collaboration. Physical spaces that can increase interaction of stakeholders within the ecosystem and offer facilities for the production and commercialization of knowledge are also an essential part of this pillar. |
| Policy | This pillar refers to laws and regulations that provide guidelines within the innovation ecosystem | Policies and regulations provide important guidelines for the coordination of the innovation ecosystem. They provide governance structures and promote confidence in the governance structures. These are essential elements to encourage the participation of stakeholders who would make investments of human and financial capital in the national innovation ecosystem to promote the generation, protection and dissemination of knowledge outputs. |

Table 1.0: Summary of selected pillars for the framework model

Kenya has a proud reputation of being a country with a tradition of innovation, often referred to as “Silicon Savannah”. However, there was a clear need to define a structure within which the national innovation ecosystem could coalesce around.

This masterplan presents a framework that proposes to establish a national innovation ecosystem that is adaptive to the rapid pace of innovation globally, one that is collaborative, one that is experimental and finally one that is inclusive. A national

innovation ecosystem that encourages the participation of all stakeholders in the generation of knowledge outputs and can provide the resources to expeditiously implement these outputs has a higher likelihood of meeting the nation’s development goals. The framework proposes a clear goal for each of the pillars and specific initiatives under each pillar to contribute towards the achievement of these goals. A detailed implementation, monitoring and evaluation plan will be developed for each of the initiatives proposed as part of each pillar.

| Pillar | Framework Goal |
|-------------------|--|
| Human Capital | Development of Relevant Skills |
| Access to Finance | Increase Access to Finance |
| Access to Market | Business Growth |
| Infrastructure | Startup and research commercialization |
| Policy | Policy coordination |

Table 2.0: Summary of goals for each of the framework pillars

The framework is proposed for adoption across all economic sectors and to support promote innovation across all three innovation typologies presented in the Kenya Innovation

Outlook Report 2022. These are process innovation, product innovation and organizational innovation.



Section 1: Introduction

1. Introduction

Innovation can make a significant contribution to the social and economic development of a nation. To achieve the intended developmental goals, countries need to put in place strategies to build, grow and sustain vibrant innovation ecosystems.

An innovation ecosystem can be described as an interaction between actors or entities whose functional goal is to enable development of technology and innovation. Innovation ecosystems are however complex systems that are made up of diverse stakeholders who view and apply innovation from different perspectives.

These ecosystems are also usually in constant evolution because of factors such as emerging technologies, policies, national development priorities among others. Therefore in a developing country context where economic resources are limited it is crucial to have a coordinated and directed approach in the growth and application of innovation towards the pursuit of developmental goals.

Currently, the country is classified as a lower middle-income

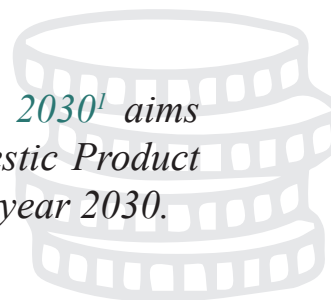
economy. Despite a decline of the GDP growth rate from 7.5 per cent in 2021 to 4.8% in 2022, the World Bank opines that the growth rate remains in line with Kenya's long terms growth plans despite the challenging global financial conditions².

Unemployment remains a major challenge in Kenya with the youth significantly impacted. The Kenya National Bureau of Statistics (KNBS) Kenya Population and Housing Census 2019³ highlighted that the country had an overall 13.7 per cent and 17.4 per cent among young people aged between 18-34 years.

The Government of Kenya (GoK) as envisioned in the social pillar of the Vision 2030 seeks to promote youth income generating activities to create more youth employment and sustainable livelihoods.

This 10-year innovation masterplan seeks to propose a structured approach towards Kenya's innovation goals and prioritization over the next 10 years towards meeting the country's development goals.

The economic pillar of the Vision 2030¹ aims to grow the country's Gross Domestic Product (GDP) to the region of 10% by the year 2030.



This document adopts the definition of innovation that is proposed by the Kenya Innovation Outlook Report 2022. This definition takes into consideration different definitions of innovation that exists and presents a summation that is best suited for the Kenyan context.

Innovation is defined as “the creation of new or distinct improvements in formal or informal settings that have disruptive positive effects on the economy and the social well-being of the citizens.”

The Science, Technology and Innovation Act (ST&I Act) 2013 provides clarity on what would make up such a creation.

This includes;

1. A technovation model, utility model or industrial design within the meaning of the Industrial Property Act, 2001 (Cap. 509)
2. A product, process, service or idea which is novel
3. An improved use of a new product, service or method in industry, business or society
4. Indigenous or traditional knowledge by community of beneficial properties of land, natural resources, including plant and animal resources and the environment
5. Any other non-patentable creations or improvements which may be deemed as deserving promotion and protection or sui generis intellectual property rights and “innovator” shall be construed accordingly.

¹ Kenya Vision 2030 available [here](#)

² World Bank, Press release: Kenya's Economy is Recovering from the Poly crisis, But Challenges Remain, 7th June 2023 available [here](#)

³ Kenya National Bureau of Statistics, Kenya Population and Housing Census 2019 available [here](#)

The Kenya Vision 2030 aims to transform Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030.

Kenya has long had a reputation as having a vibrant innovation ecosystem in the sub-Saharan Africa (SSA) region. The World Intellectual Property Organization's (WIPO) Global Innovation Index (GII) provides an assessment of a country's state of innovation by reviewing the science and innovation investments, technological progress, technology adoption and socio-economic impact within the nation's innovation ecosystem.

GII 2023⁴ ranked Kenya at position 100 globally and 8th within the SSA region behind Mauritius, South Africa, Botswana, Cape Verde, Senegal, Namibia and Ghana. This is a decline from the previous year's ranking of 88th globally and 4th regionally. There is therefore opportunity for intentional action to improve the country's innovativeness.

A conclusion of the UNDP's mapping of the innovation ecosystem in 2022⁵ stated that "despite having multiple policy documents in place, Kenya does not currently have a common coherent strategy and vision for the innovation ecosystem. Nevertheless, the Kenyan innovation ecosystem is inspired by Vision 2030.

This being the case, therefore, it is important to develop a coherent stand-alone innovation policy and strategy." This lack of coherence has resulted in several misconceptions around innovation in the country which has limited its

systemic adoption and implementation. Some of the common misconceptions are highlighted in figure 1.0. This document is the first step towards that innovation policy and strategy.

Several innovation ecosystem mapping efforts reflected in the recently launched Kenya Innovation Outlook Report 2022⁶, highlighted significant challenges to be overcome within the current innovation ecosystem.

Key among these concerns are: a lack of coordination and regulation; an inability to optimally tap into the growing stock of knowledge, assimilate and adapt it to local needs; failure to commercialize Kenya's excellent research and maximize its benefits; a funding gap for start-ups, and a gap in skills and culture that encourages innovation, fueled by limited policies directly supporting innovation.

This document attempts to address the need for a coherent vision and intentional interventions that leverage the windows of opportunity created by some of the challenges that exist within the national innovation ecosystem.

A participatory approach was adopted in the development of this document. Every effort was made to ensure that it accommodates the views of diverse stakeholders in the ecosystem.

⁴OECD. (2005). Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd ed. Paris: OECD Publishing available [here](#)

⁵WIPO (2023) Global Innovation Index 2023: Innovation in the face of uncertainty

⁶UNDP (2022) Mapping the innovation ecosystem in Kenya








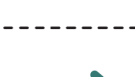




| Innovation misconceptions that innovation is... | | When actually innovation is... |
|---|---|---|
| For certain groups of people - creative geniuses or young people |  | For and by anyone |
| About inventing new things only |  | About new or novel ideas, remixes of existing ideas or old ideas applied in new contexts or markets |
| Done by certain departments or within organisations (in R&D or innovation labs) |  | By anyone and often people on the frontline or with lived experience of the problem are the best innovators |
| Only useful for creating jobs |  | Capable of creating justice, progress, prosperity, sustainability |
| A one time event |  | A continuous process, and a mindset |
| A top down affair and the responsibility of a few people |  | Everyone's job |
| Guarantees quick success |  | Possible to measure early with proxy measures but sometimes needs patience and long-term outlooks |
| Requires too much money to do |  | Affordable when starting small to test and learn |
| Happens while working in isolation |  | Driven by people |
| Intentions are positive or it only leads to positive outcomes |  | The cause of unintended consequences sometimes |
| Inborn and cannot be caught |  | A skill that can be learned |
| Happens while working in isolation |  | Targets local and global markets, niche or major markets |

Figure 1.0: Common misconceptions on innovations



**Section 2:
Current Context**

2. Current Innovation Ecosystem Context

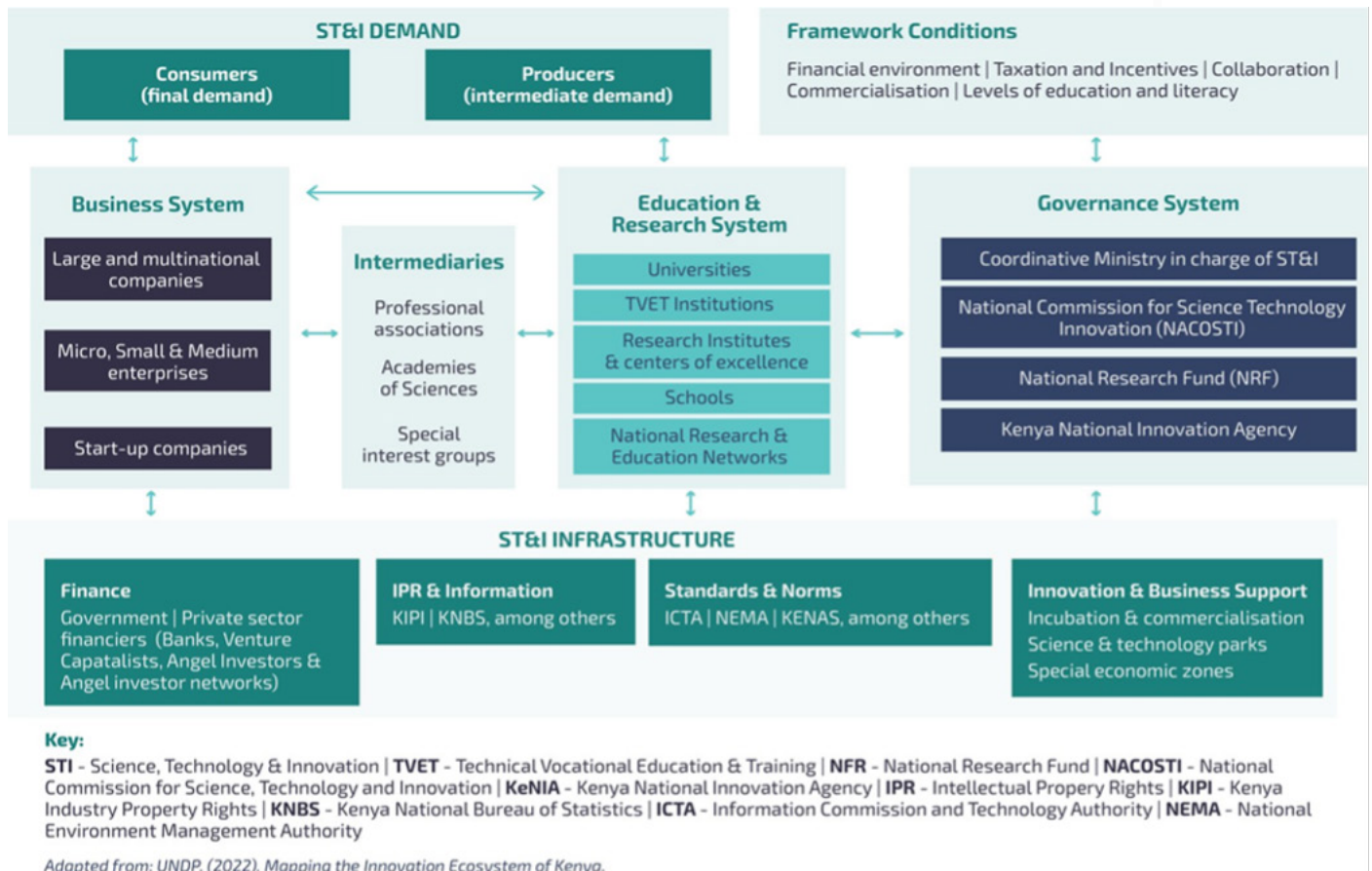


Figure 2.0: Brief description of the innovation ecosystem in Kenya, Source: UNDP and Konza Technopolis, Mapping the Innovation Ecosystem in Kenya, 2022

The Kenya Innovation Outlook Report 2022 defines an innovation ecosystem as “an interaction between actors or entities whose functional goal is to enable development of technology and innovation.” The Kenyan Innovation Ecosystem consists of innovation producers, innovation consumers, innovation and business support structures, innovation

governance system, innovation infrastructure, and innovation policy framework, amongst others. In a knowledge economy, no single actor has ownership of the responsibility to generate sustained innovation, each actor plays a unique role that is necessary for the successful operation of the ecosystem.

Interaction between ecosystem players is supported by political and legal frameworks and processes, culture, business systems, infrastructure, and professional associations.

An innovation ecosystem is made up of enabling policies and regulations, accessibility of finance, informed human capital, supportive research markets, energy, transport and communications infrastructure, a culture supportive of innovation and entrepreneurship, and networking

assets, which together support productive relationships between different actors and other parts of the ecosystem.

To support the necessary knowledge economy that Kenya needs to achieve its socio-economic developmental goals, the coordination of all these elements and actors is critical to ensure collective efforts produce the necessary innovation towards the national priority development goals.



Figure 3.0: How innovation promotes development

The Kenya National Innovation Agency (KeNIA) is a state corporation that was established under the Science, Technology and Innovation (STI) Act, No 28 of 2013.

KeNIA's core mandate is to develop and manage the national innovation ecosystem with a vision of being a key enabler of socio-economic development through innovation.

Therefore in the implementation of its mandate KeNIA is leading the development and dissemination of this 10

year innovation masterplan to provide a clear strategic roadmap that the ecosystem can coalesce around.

As a result of the participatory process of developing the masterplan, KeNIA was able to narrow down five essential pillars that have the capacity to farther catalyze the Kenyan innovation ecosystem and bring about the intended innovation output to drive socio-economic development. These were policy, access to finance, human capital, infrastructure and access to markets.

| Pillar | Description | Relevance |
|-------------------|--|---|
| Human Capital | This pillar refers to the efforts to enhance relevant skills and experience for among the population for quality output production in the knowledge economy | Qualified human resources, from policy makers to innovators are a vital component of a successful knowledge economy. Development of accessible technical and managerial programs whose graduates would be better equipped to competitively participate in a global knowledge economy is essential to the success of the national innovation ecosystem. Improving the capacity of training institutions in the country to better support generation and commercialization of innovation is central to this pillar. |
| Access to Finance | This pillar refers to funding required to support the successful operation of the national innovation ecosystem. This includes the production and commercialization of the outputs of the knowledge economy. | Financial resources are essential to the sustainability of a knowledge economy. Capital is necessary for the funding of the development of infrastructure, commercialization operations, policy development and human capital development. Increasing the pool of funds available to stakeholders within the national innovation ecosystem is essential to the long-term success of the knowledge economy. |
| Access to Markets | This pillar refers to finding opportunities for generation of commercial value from the outputs of the knowledge economy. This includes finding, growing and maintaining commercial relationships | The success of the knowledge economy will depend on the ability to create new markets for the outputs of the national innovation ecosystem. Intentional efforts should be made to develop local market opportunities and to open regional and international markets for these outputs. This will include creating awareness of these commercial opportunities and ensuring the output meets the quality standards required to access these markets. |
| Infrastructure | This pillar refers to physical and virtual solutions that support the ability of actors within the knowledge economy to produce quality outputs | The importance of investment in solutions that support the acquisition, creation and dissemination of knowledge for economic development cannot be overstated. This includes physical infrastructure such as information, communication and technology (ICT) equipment and services that can interconnect the innovation ecosystem to promote collaboration. Physical spaces that can increase interaction of stakeholders within the ecosystem and offer facilities for the production and commercialization of knowledge are also an essential part of this pillar. |
| Policy | This pillar refers to laws and regulations that provide guidelines within the innovation ecosystem | Policies and regulations provide important guidelines for the coordination of the innovation ecosystem. They provide governance structures and promote confidence in the governance structures. These are essential elements to encourage the participation of stakeholders who would make investments of human and financial capital in the national innovation ecosystem to promote the generation, protection and dissemination of knowledge outputs. |

Table 3.0: National Innovation Ecosystem pillars of focus

2.1 Human Capital

The achievement of the social, economic and political pillars of Kenya's Vision 2030 is dependent on the availability of quality human resources. Kenya has benefited from significant direct foreign investment partly due to the quality of its human resource. 85.5 per cent of men and 79.8 per cent of women aged above 15 years and above can read and write. A literacy rate that is above sub-Saharan Africa's average of 73.8 per cent for men and 60.9 per cent for women.

The GoK has put in place human resource development measures to develop a globally competitive and adaptive human resource pool to meet the needs of a rapidly industrializing local economy. This includes the introduction of the Competency Based Curriculum (CBC) which is designed to emphasize the significance of developing skills and knowledge by applying those competencies to real life situations.

This human capital is also necessary for successful participation in a competitive global economy. In the promotion of ST&I these efforts include the establishment of more technical training institutions, increased emphasis on Science, Technology, Engineering and Math (STEM) subjects and closer links between training institutions and the labour market. Improved links between training institutions and labour markets are essential to the production of a more relevant and skilled workforce.

However, there is still a shortage of relevant and skilled talent in the ST&I sector because of emerging technologies such as artificial intelligence. Formal education and training have also struggled to meet some of the unique labour market needs because of the rigidity of the system and the broadness of its courses.

The labour market is increasingly shifting towards highly specialized, narrow skills for work. Public and private technical and vocational education and training (TVETs) centers are meeting this need for more specialized training. Kenya has experienced an 87 per cent increase in the number of TVETs increasing from 874 in 2015 to 2,191 by the year 2020. Though this signifies a deliberate

investment in the establishment of TVETs, most TVETs lack sufficient funds to sustain their operations. Industry players are partnering with the TVET institutions to offer company/product specific training, internships and mentorship for graduates.

The labour market's reliance on formal qualifications from formal institutions as a measure of competence has also limited the increased absorption of available workforce. There is a sizable proportion of the labour workforce who have undertaken learning through non-formal and informal means such as apprenticeships or are self-taught. This may be because of inability to access or afford formal training at formal institutions.

In response to this, the GoK has recently adopted the recognition of prior learning policy framework. The policy seeks to recognize informal education and training undertaken within the country regardless of how the learning was achieved. Kenya's universities also play a vital role in the development of qualified workforce. The number of universities has increased to 74 in 2020 up from the 66 that existed in 2015. The Open University of Kenya (OUK) at the Konza Technopolis has also very recently been awarded a charter, becoming Kenya's first virtual university.

The OUK is an example of the GoK's efforts to address the challenge of access to formal education by Kenyans through a virtual institution that makes it possible to access relevant training from anywhere in the country.

A well trained and sophisticated human capital base is essential to the local knowledge economy as they produce more sophisticated knowledge outputs that can be commercialized, easily adopt and utilize sophisticated technologies in the production of knowledge output, contribute to the drafting of policies and regulation that impact the knowledge economy and finally put to effective use the financial resources made available for the development of the knowledge economy.

2.2 Access to Finance

Kenya has a regulated financial services sector that is made up of the banking, insurance, capital markets, pensions and SACCO sectors. A 2023 report by the financial sector regulators⁷ on the stability of the financial sector recognized that the financial sector had grown significantly by assets size, capital base, and profitability.

However, capital markets have recorded a significant decline in foreign investors' participation. The microfinance banks remain vulnerable to shocks, with the sector yet to record meaningful profits in the five-year period that was under review in the report. Kenya remains an attractive destination to private equity (PE) and venture capital investors because of a diversified economy and a large talent base.

These investors view Nairobi as a preferred base for scouting investment opportunities in the East African Community (EAC). An analysis by the East Africa Venture Capital Association (EAVCA) shows that the country accounted for 69 per cent of the 478 PE and development finance institution (DFI) investments made between 2013 and the first half of 2023.

Kenya is recognized as a leader in financial services innovation having achieved significant financial inclusion milestones. M-Pesa has revolutionized the financial services sector in Kenya and its success story has significantly contributed to Kenya's reputation globally. There is growing innovation in the financial services sector and more solutions have since been developed to increase levels of financial inclusion in the country.

The regulatory condition in the sector remains conducive to the adoption of additional innovation to increase inclusivity and improve service delivery. Kenya has done very well in relation to financial inclusion, which stands at 88 per cent (those using formal – 83.7 per cent and informal – 4.7 per cent financial services).

The most recent FinAccess Household Survey indicated that this level of financial access is mostly because of formal financial

services. Technology has also played a role in influencing how Kenyans access financial services, majority prefer digital channels in conducting their daily and weekly transactions.

The Central Bank of Kenya (CBK) recently launched the national payment systems strategy 2022 – 2025 with a vision to build a secure, fast, efficient and collaborative payments system that supports financial inclusion and innovations that benefit Kenyans.

This payment strategy builds on previous developments within the payment system including the establishment of a real time gross settlement (RTGS) system, adoption of mobile money services and improvements to the clearing system. The strategy also positions the country for the future by taking into consideration significant technology developments such as blockchain technology that have seen the growth of cryptocurrencies and increase the likelihood of having a Central Bank Digital Currency in the future.

Despite these positive developments within the financial services sector there is about a USD19.3 billion formal MSME finance gap in Kenya. To meet the challenge of addressing this finance gap, stakeholders in the sector are adopting innovative approaches. An example of this is the Capital Markets Authority (CMA) who have developed a regulatory sandbox.

The CMA sandbox is a tailored regulatory environment that allows for the live testing of innovative capital markets related products, solutions and services that have the potential to deepen and develop the capital markets prior to launching into the mass market. A stable, secure and trusted financial services sector is essential to a strong knowledge economy.

The attraction of additional capital would increase the capacity to finance operations within the other pillars identified herein. It would also improve the capacity to access and compete in new markets by facilitating local and international payments.

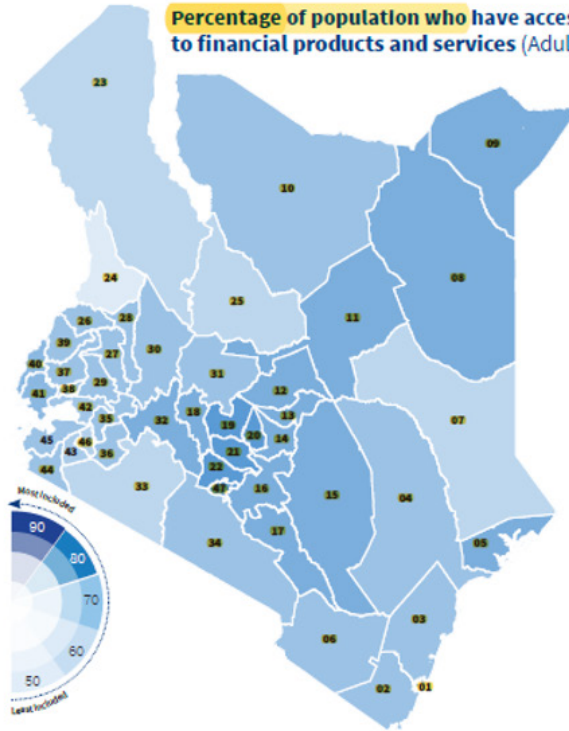
⁷Financial Sector Regulators, Kenya Financial Sector Stability Report, September 2023, Issue No 13 available [here](#)

FINANCIAL INCLUSION

Overall financial access 2006-2021 (%)



Percentage of population who have access to financial products and services (Adults 18+)



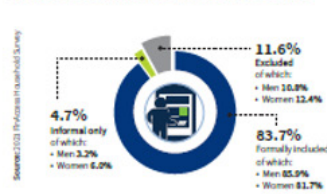
| CODE | COUNTY | % |
|------|-----------------|------|
| 01 | Mombasa | 89.8 |
| 02 | Kwale | 72.9 |
| 03 | Kilifi | 74.4 |
| 04 | Tana River | 71.3 |
| 05 | Lamu | 84.2 |
| 06 | Taita-Taveta | 82.0 |
| 07 | Garissa | 60.7 |
| 08 | Wajir | 86.5 |
| 09 | Mandera | 83.8 |
| 10 | Marsabit | 78.4 |
| 11 | Isiolo | 87.8 |
| 12 | Meru | 81.0 |
| 13 | Tharaka-Nithi | 84.5 |
| 14 | Embu | 87.7 |
| 15 | Kitui | 80.4 |
| 16 | Machakos | 89.6 |
| 17 | Makueni | 87.5 |
| 18 | Nyandarua | 81.1 |
| 19 | Nyeri | 93.8 |
| 20 | Kirinyaga | 92.2 |
| 21 | Murang'a | 92.8 |
| 22 | Kiambu | 91.8 |
| 23 | Turkana | 60.3 |
| 24 | West Pokot | 57.7 |
| 25 | Samburu | 68.6 |
| 26 | Trans Nzoia | 89.3 |
| 27 | Uasin Gishu | 87.6 |
| 28 | Elgeyo-Marakwet | 73.8 |
| 29 | Nandi | 79.3 |
| 30 | Baringo | 74.9 |
| 31 | Laikipia | 83.4 |
| 32 | Nakuru | 87.8 |
| 33 | Narok | 64.9 |
| 34 | Kajiado | 88.7 |
| 35 | Kericho | 85.8 |
| 36 | Bomet | 78.6 |
| 37 | Kakamega | 79.5 |
| 38 | Vihiga | 79.0 |
| 39 | Bungoma | 73.9 |
| 40 | Busia | 78.2 |
| 41 | Siaya | 83.8 |
| 42 | Kisumu | 88.2 |
| 43 | Homabay | 81.8 |
| 44 | Migori | 75.5 |
| 45 | Kisii | 81.1 |
| 46 | Nyamira | 76.8 |
| 47 | Nairobi City | 95.0 |

A. Demographic Information

Distribution by sex (adults 18 years +)



B. Access to Financial Services and Products*



Source: 2021 FinAccess Household Survey
 NOTE: *Refers to the proportion of men and women sampled. Included and excluded from financial services

Figure 4.0: State of financial inclusion in Kenya, Source: Financial Sector Deepening, FinAccess Household Survey 2021

2.3 Access to Markets

Kenya is a signatory to many international treaties and trade agreements. These agreements not only make it easier for Kenya to access modern technology and investments that can improve the local knowledge economy, but they also make it easier for Kenya to export the outputs of its knowledge economy into new markets.

Some of the treaties that have created new market opportunities include:

1. **The East African Community (EAC):** The EAC is a common market that is made up of Kenya, Tanzania, Uganda, Rwanda, Burundi, South Sudan and the Democratic Republic of Congo (DRC). This consolidation has created a market of around 174 million people with purchasing power of about USD 473 billion
2. **Common Market of East and Southern Africa (COMESA):** COMESA is one of the largest trading agreements in Africa creating an area made up of 21 countries. This agreement creates a market of 560 million people with a GDP of around USD 768 billion
3. **African Continental Free Trade Area (AfCFTA):** AfCFTA compliment regional integration efforts by creating a common market of 54 of the 55 African Union Countries who have already signed the agreement. Once operational AfCFTA will be the largest since the formation of the World Trade Organization (WTO).

In addition to the regional agreements, Kenya has agreements in place with international regions. This includes being part of the Africa Growth and Opportunities Act (AGOA) with the United States of America (USA) and the Economic Partnership Act (EPA) with

the European Union. These agreements allow for reduction in tariffs and quotas to allow for increased access of Kenyan products to these markets. These regional and international collaborations therefore allow the national innovation ecosystem to endeavour to produce outputs of an international quality that can compete in these markets.

The ability to identify, grow and maintain new markets for the outputs of our knowledge economy is essential to its long-term sustainability. While most innovation is usually to address an immediate local need, it is important to also encourage the invention of solutions that meet a more global demand with this would increase the likelihood of such inventions finding commercial value in the markets it expands into.

New markets have their unique aspects in relation to market forces such as competition, regulation and purchasing power among other characteristics. Though Kenyan output is already accessing these markets the level of awareness of the new markets, agreements in place and entry requirements remain low across the national innovation ecosystem.

Private sector entities such as the Kenya National Chamber of Commerce and Industry (KNCCI) and Kenya Private Sector Alliance (KEPSA) are playing their role in enabling their members to access. GoK through the Kenya Export Promotion and Branding Agency (KEPROBA) is also investing in the promotion of Kenyan products internationally through initiatives such as the “makeitkenya” program.

2.4 Infrastructure

The national knowledge economy is supported by a network of physical and virtual infrastructure solutions that promote the ability for innovation to occur. Kenya enjoys fairly stable electricity supply in comparison to other East African countries.

The Energy and Petroleum Regulatory Authority (EPRA)⁸ estimates that more than 90 per cent of the country’s electricity is generated from renewable sources and that electrification stands at more than 75 per cent. As at the close of 2022,

Kenya had close to 48 million internet subscribers 68 per cent of whom were mobile broadband users. This connectivity is powered by six (6) submarine fiber cables and an extensive fiber optic network across the country to improve access.

The availability and stability of this infrastructure raises the likelihood of adopting technology within the knowledge ecosystem which increases production and collaboration capacity among stakeholders within the national innovation ecosystem stakeholders.

The government, private investors, and non-governmental organizations (NGOs) have invested in the establishment of innovation centers across the country. Innovation centers has been adopted as a collective term that refers to incubators, accelerators, co-working spaces, academic innovation hubs among others.

Innovators rely on these centers for services such as flexible working spaces, business development services such as formalization, seed capital investment among other services to increase their innovation capacity.

Though still concentrated in the urban centers there seems to be a fair distribution of these centers across the country as represented in the diagram below. The business development

services that innovators receive from these innovation centers are essential for the growth and commercialization of the innovation happening in and around the centers

The GoK has invested in county innovation hubs and other physical spaces to close the urban- rural divide and make such services available to all at the grassroot level. Innovation centers require continuous support to ensure they remain relevant and sustainable within the communities they serve.

Some of the areas of need that that were highlighted innovation centers include funding, skills development, policy support and research and development among others

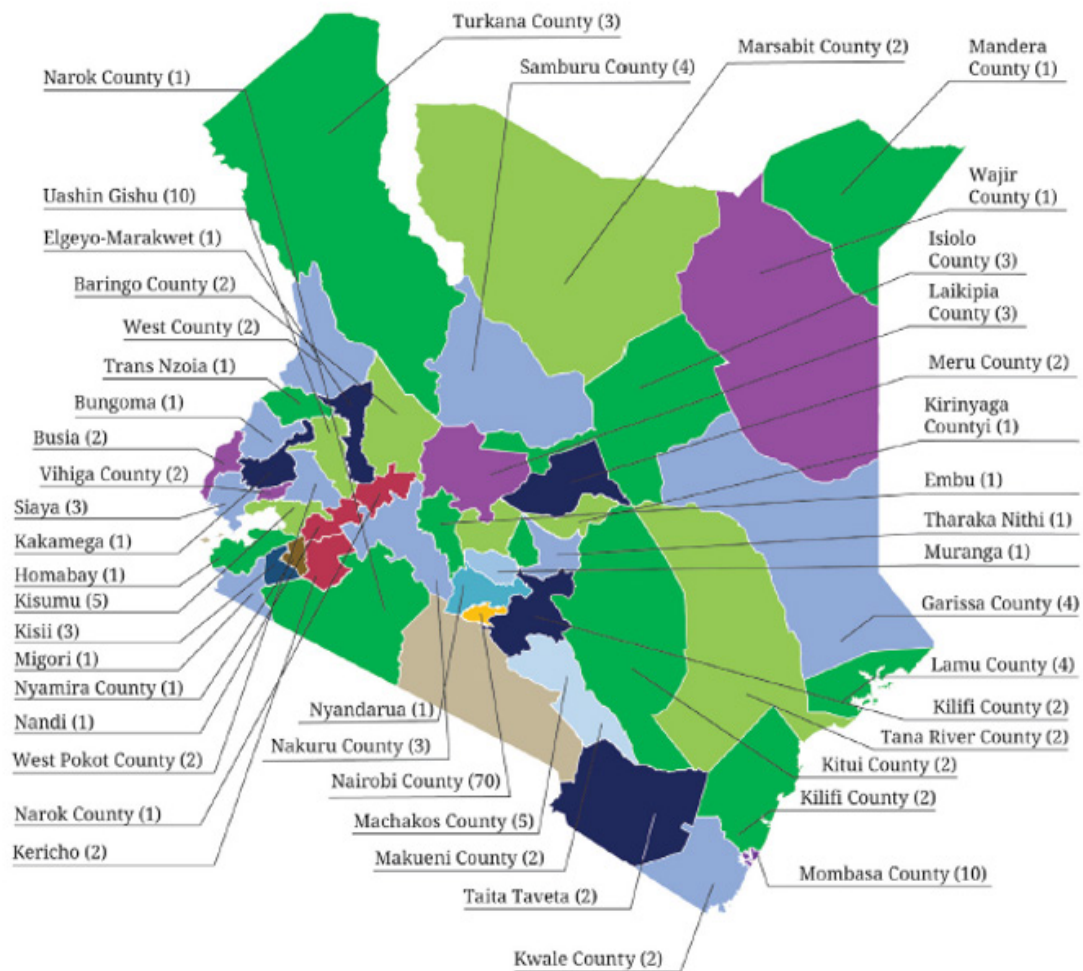


Figure 5.0: Distribution of innovation centers in Kenya, Source: UNDP and Konza Technopolis, Mapping the Innovation Ecosystem in Kenya, 2022

2.5 Policy and Regulation

Policies and regulations are important to a national innovation ecosystem because they provide guidelines and governance structures for the operation of the ecosystem. Science, Technology and Innovation (ST&I) is a priority sector for the GoK in its efforts to build a resilient knowledge-based economy.

An organized and professionally managed ST&I sector would provide incentive for additional investment by stakeholders leading to an increased level of productivity of the national knowledge economy. Kenya currently has several ST&I related policies and regulations in place at the national level.

Counties are however lagging in definition and implementation of county level policies and regulations to promote innovation in the counties.

The ST&I Act 2013⁹ is currently the principal act of parliament that facilitates the promotion, coordination and regulation of the progress of ST&I in the country. The Act established three (3) institutions relevant to this mandate. These are:

1. **National Commission of Science Technology and Innovation (NACOSTI):** NACOSTI was established as the successor to the National Council for Science and Technology and has a mandate to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related to STI.
2. **Kenya National Innovation Agency (KENIA):** The agency is mandated with catalyzing the national innovation ecosystem through among other roles to institutionalize linkages between universities, research institutions, the private sector, the Government, and other actors in the ecosystem.
3. **National Research Fund (NRF):** The fund's mandate is to facilitate research for the advancement of ST&I. The Act envisioned a fund equivalent to a minimum of two (2) per cent of the country's Gross Domestic Product (GDP) that was to be provided by the national treasury.

In addition to the ST&I Act of 2013, several other policies and regulations that address various aspects relevant to the knowledge economy are at various levels of enactment. Some of these are highlighted in the table below:

| Policy | Sector |
|--|-----------------|
| The Digital Economy Blueprint 2019 | Digital Economy |
| The Startup Bill 2021 | StartUp |
| Kenya Micro and Small Enterprise Policy 2020 | MSE |
| Industrial Property Acts | Industrial |
| Special Economic Zones Act 2015 | Manufacturing |
| University Act 2021 | Education |

Table 4.0: Current innovation related policies and regulations in Kenya

Despite the existence of the above-listed policies and regulations, there is a need to fast track the implementation of those policies that have since stalled and for creation of additional ones. This is in response to the need to update those that were drafted some

time back and to put in place new ones relevant to the current context. Stakeholders in the ecosystem however feel that a lot more could be done to increase the participation of ecosystem stakeholders in the definition of these policies and regulations.

⁹Government of Kenya, Science, Technology and Innovation Act 2013 available [here](#)

■ Section 3: ■ Windows of Opportunity



3. Windows of Opportunities within the Pillars

Though Kenya has made progress in each of the pillars towards a stronger national innovation ecosystem, some challenges still persist. These challenges have so far contributed to the national innovation ecosystem not realizing its full potential. By acknowledging

these challenges, we can recognize the opportunities for improvement that they present. This section will identify some of these challenges within each pillar and explore what opportunities they present.

3.1 Human Capital



Innovation Diffusion:

There is a misconception within the local innovation context that innovation is mostly the domain of the ICT sector. This has resulted in limited adoption of innovation and the processes related to innovation generation within the other sectors of the economy. This misconception has also resulted in fewer individuals emerging to develop innovations and startups, either from research or ideas. This minimalistic adoption of innovation could potentially limit the socio-economic gains that the country attains.

This creates a unique opportunity to increase the contribution of innovation to the nation's economic development by increasing the capacity for innovation through capacity building and awareness creation throughout the public and private sector.

Market Linkages:

There long has been a mismatch between industry expectations and the graduates that our training institutions are producing. This is mostly because of limited interaction between industry and training institutions. Labour intermediation mechanisms have also not been as effective and are therefore unable to make appropriate connections between the labour demand and supply sides.

There is an opportunity to increase the interaction between industry and the training institutions to increase the likelihood of immediate transition to work for graduates. Closer collaboration between industry and academic institutions will ensure that universities redesign their programs to increase their relevance and increase the long-term job prospects of their graduates through specialization.





Generational Shift:

Kenya is also experiencing a generational shift related to the approach to work. Young people are less inclined to full-time and/or long-term employment. They are more inclined to short term engagements and are also more inclined to venture into innovation driven entrepreneurship.

This shift in mindset offers an opportunity to also transform our approach to tertiary education and make a shift towards venture-based programs where students can focus on developing a venture as partial requirements for their degree qualifications. This will require investments in science and technology centers at our academic institutions to support these ventures.

3.2 Access to Finance

Systemic Innovation Funding:

Access to capital continues to be a major challenge to the growth and sustainability of innovation in the national innovation ecosystem. Though the NRF fund has been established and is in operation, it is still limited in the capacity to finance innovation efforts. Financial resources are required to enable investments into early-stage startup funding, commercialization grants, infrastructure, development of innovation policies, access to markets and investments into human capital. This challenge offers an opportunity to establish an innovation funding program that is supported by the private sector to make available the financial resources for priority national innovation ecosystem initiatives.



Investment Assessments:

Financial resources are usually limited, this would usually mean that not all that apply for the resource would receive the support. The conventional investment assessment tools especially at financial institutions, have proven to be unfairly skewed against innovation. Lack of formality, minimal collateral, limited understanding of the segment by financial institutions and limited capacity of the management teams are some of the reasons why innovation-based enterprises have failed to secure funding within the ecosystem.

The national innovation funding program could adopt new ways to meet the demand of this unique client segment. Firstly, the program could implement an alternative credit scoring method that would take into consideration aspects unique to invention such as the unique value proposition of the invention. Secondly, the program could explore offering non-financial support that would improve the readiness and capacity of the innovator to attract and manage financial investment. Finally, the program should also adopt appropriate technology channels that could improve the engagement with ecosystem stakeholders, evaluation of potential clients and disbursement of funds that are best suited for the local context.



3.3 Access to Markets

Preferential Market Access:

Many inventors in the national innovation ecosystem struggle to identify and develop market share beyond their initial target market. The lack of sustained growth through new market acquisition has limited the commercial potential of many inventions within the ecosystem.

Most then tend to fail within three (3) to five (5) years of their formation. This situation presents a unique opportunity to consider preferential market access programs for outputs of the knowledge economy. This could include preferential procurement policies for locally produced inventions within the public procurement system.



Lack of Awareness:

Kenya is a signatory to many trade agreements that provide unique opportunities to expand into new markets. There is however limited understanding within the ecosystem on the availability of these opportunities, how they can access them and how best they can leverage these to obtain the commercial value of their invention.

Targeted capacity building and exchange tours to these markets could expose these stakeholders to growth opportunities and potential partners within these alternative markets.

Accessibility:

Securing sufficient visibility within the marketplace is always a challenge for many knowledge producers. Despite the quality of their solutions, many producers in the national innovation ecosystem have struggled to position and promote their solutions to be competitive in new markets. The cost of travel, promotion and licensing among other costs have been a barrier to their success in the new markets. Adoption of modern technology could present alternatives to previous conventional approaches that have not been as successful. The GoK through KEPROBA has adopted digital platforms such as the “makeitkenya” export promotion e-platform. There is therefore an opportunity for the adoption of digital technologies to increase the visibility of the outputs of our knowledge economy and market access.

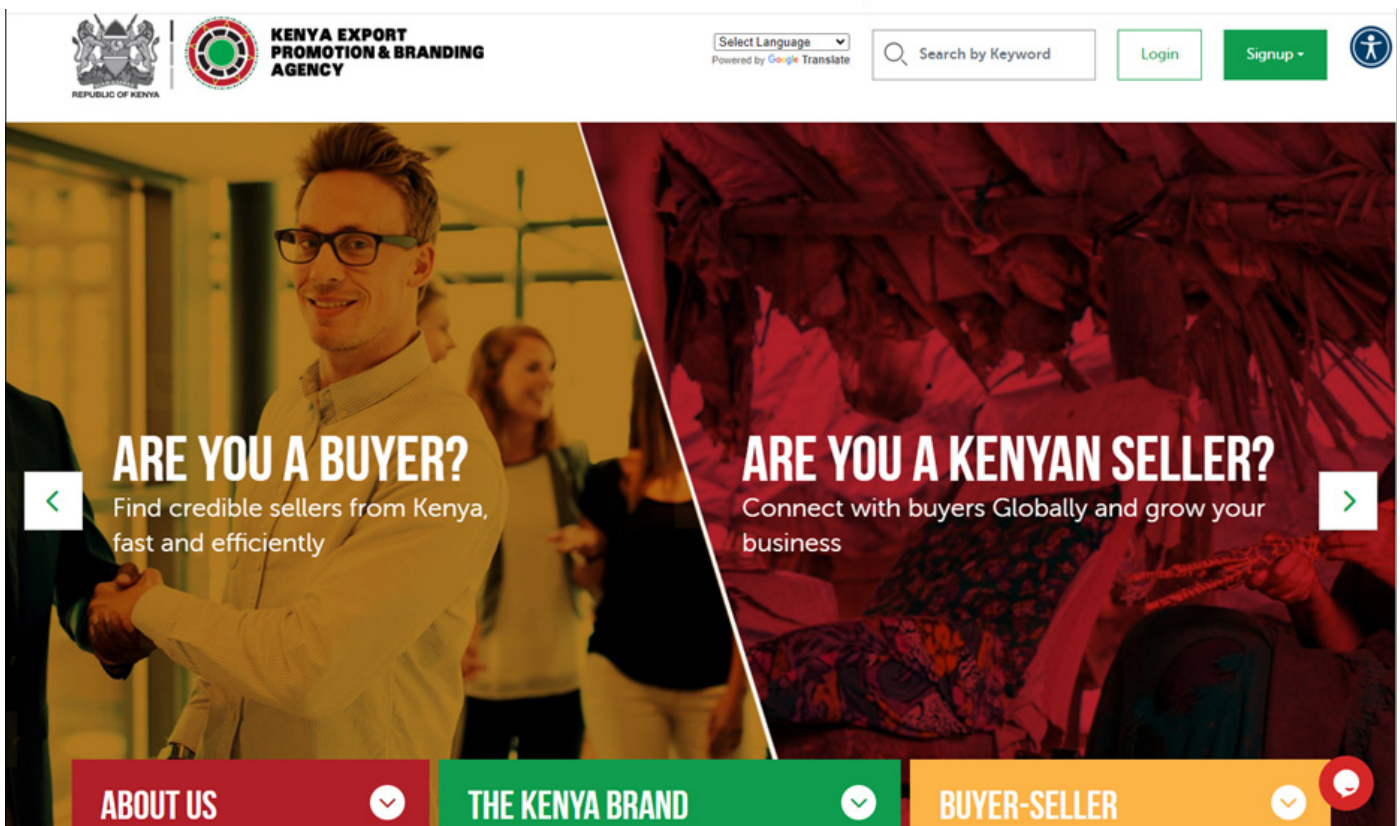


Figure 6.0: MakeitKenya Export Promotion e-portal

3.4 Infrastructure

Centers of Excellence:

The transition of innovation from idea to commercialization requires an elevated level of support from the current levels offered at some of the innovation centers in Kenya. This realization presents a unique opportunity to upgrade select innovation centers across the country to knowledge economy centers of excellence.

Centers that would have the facilities, equipment and knowledge resources to support innovation driven entrepreneurship and commercialize the outputs of this process



Central Innovation Repository:

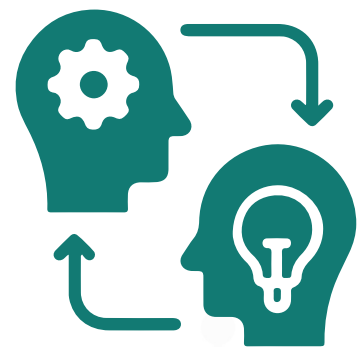
Though innovation centers are well distributed across the country, there was insufficient coordination among the centers. There is currently no single database of all innovation driven enterprises in Kenya.

This makes it difficult for the coordinating agency to know the full scope of solutions that are available within the national innovation ecosystem. The lack of this central repository also makes it difficult for stakeholders such as financial investors to easily identify promising innovation that can benefit from their financial investment.

Knowledge Transfer:

An evaluation of the current innovation ecosystem, it is easy to conclude that there is insufficient knowledge transfer happening across the ecosystem. Some innovation centers are having more success than others in developing their enterprises.

Successful innovation ecosystems have efficient knowledge transfer systems that allow development of minimum quality standards and guidelines that could raise the level of support offered at these innovation centers across the ecosystem. These are usually delivered through a nationally coordinated enterprise development program that develops these standards.



3.5 Policy

Innovation Gap:

There continues to be an evident rural-urban gap in relation to innovation in the country. Most of the innovation investment and infrastructure is concentrated in urban areas. Though there has been progress in reducing this gap through initiatives such as the county innovation hubs, more could be done to reduce this gap and encourage innovation at the county level.

There is currently a national innovation policy that is yet to be enacted and very few county level innovation policies. There is an opportunity to complete the adoption of the national innovation policy and support counties develop their innovation policies to catalyze county innovation ecosystems.



Policy Awareness:



The level of awareness of existing policies and the importance of the same are still low across the national innovation ecosystem. Stakeholders are not sufficiently aware of existing policies and regulations, do not fully understand those that they are aware of and consequently do not appreciate what benefits that they could derive from the same. Unfortunately, some stakeholders only become aware of some policies during enforcement by responsible government agencies.

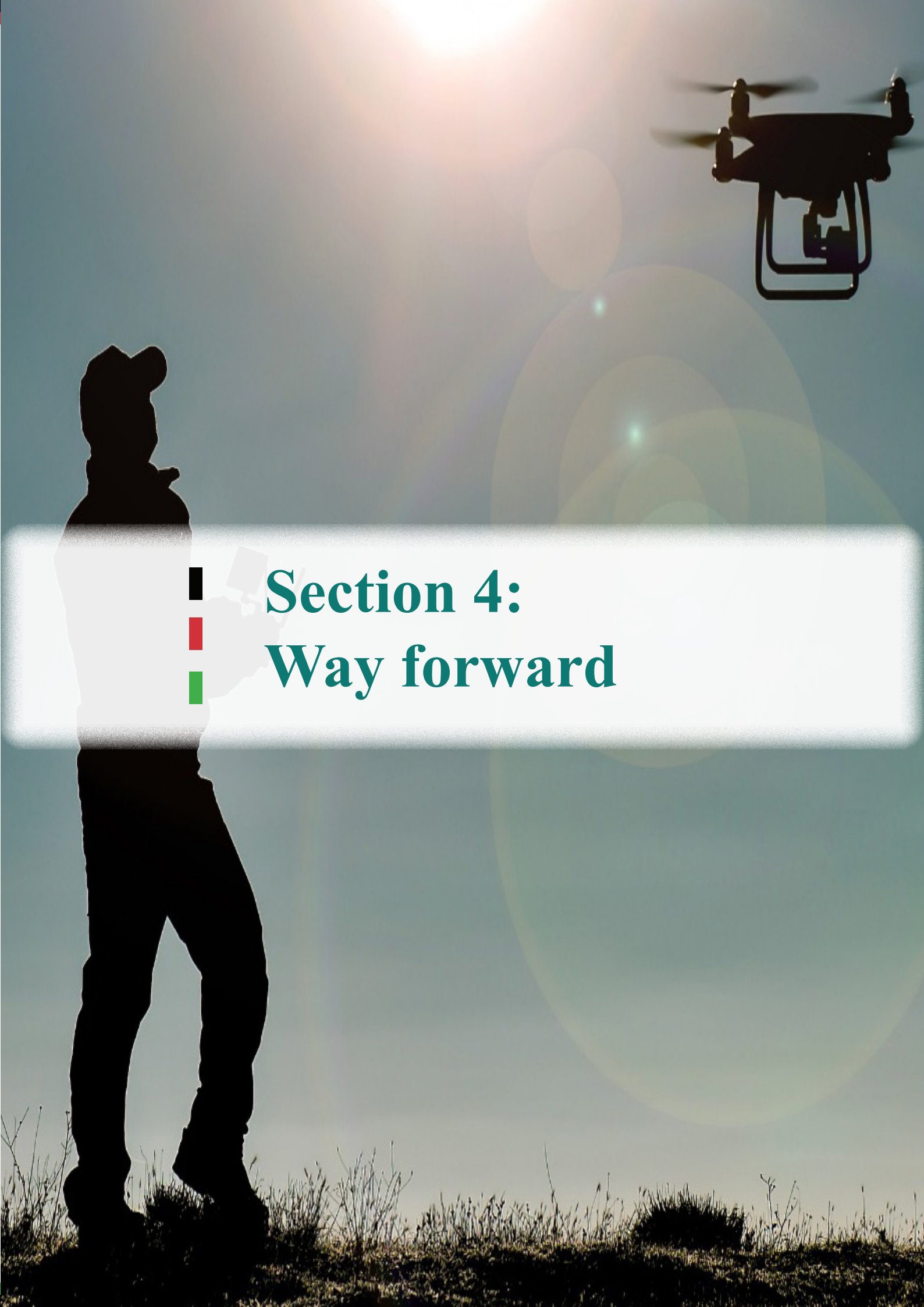
Stakeholders exhibited an interest in continuous engagement and involvement in the development of policies and regulations to ensure that these are responsive. There is an opportunity to establish channels through which ecosystem stakeholders and duty bearers can proactively engage to address ambiguity around existing policies and frameworks. These channels could also be utilized to inform new policies and regulations.

Idea Exchange:

Engagement among ecosystem stakeholders has been limited by the lack of policies and regulation that protects the intellectual property of innovators. This limited engagement has hindered the growth of promising ideas that have failed to secure support at an early stage.

This is usually because innovation producers lack the confidence that their intellectual property is sufficiently protected to enable them to share their ideas. Such uncertainty presents an opportunity for the creation of policies and regulations that raise the confidence levels among innovators by providing assurance around their intellectual property.





**■ Section 4:
■ Way forward
■**

4. National Innovation Framework

This 10-year innovation masterplan proposes an implementation framework that sets out the GoK’s aspiration for the national innovation ecosystem. The framework is informed by the analysis of the current context and the windows of opportunity that exist

within the national innovation ecosystem as documented in section two (2) and three (3) above.

The diagram below offers a visual representation of the framework.

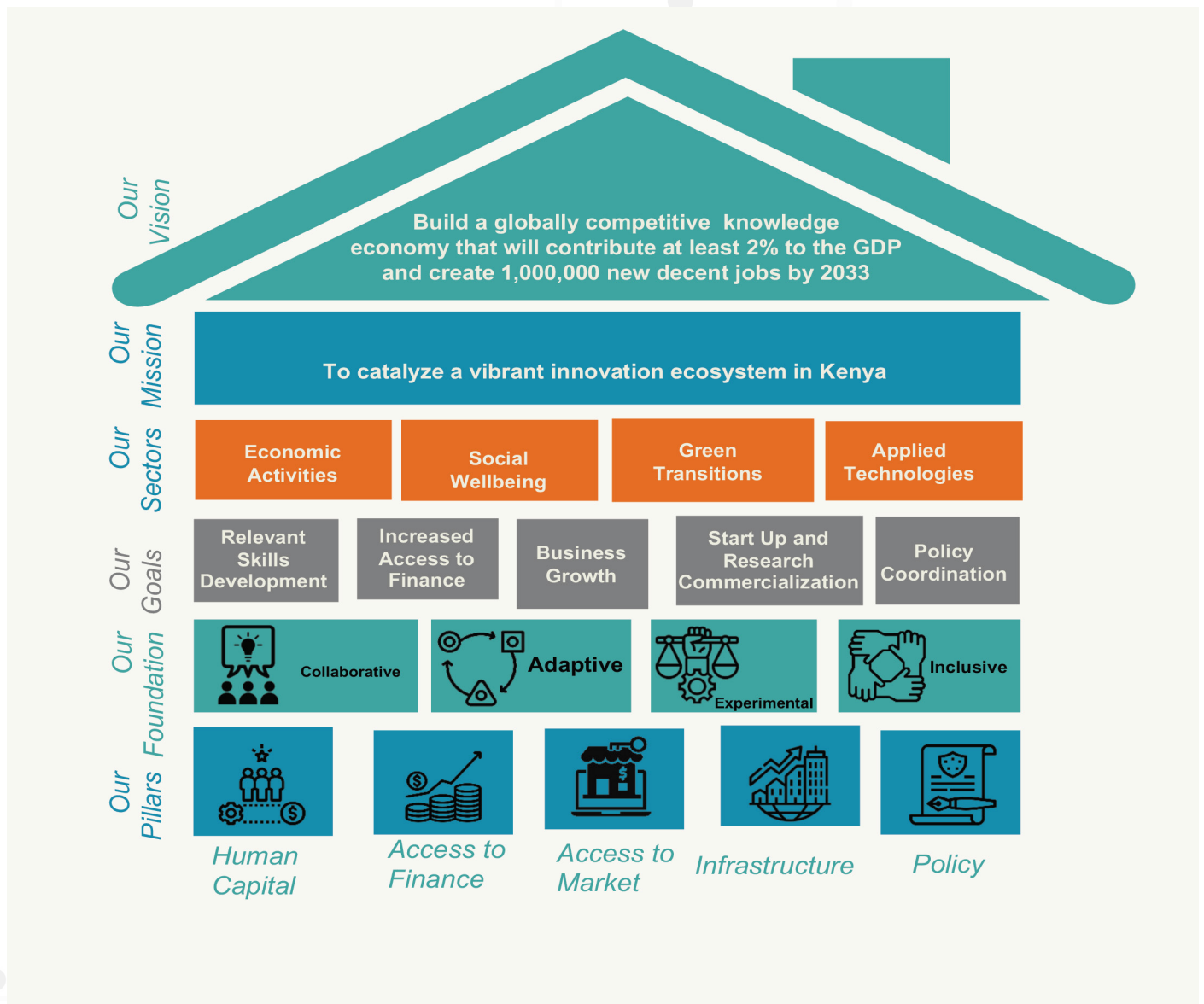


Figure 7.0: Proposed Kenya Innovation Ecosystem Development Masterplan Framework

This framework represents a 10-year focus to strengthen a national innovation ecosystem that is based on four (4) foundational principles

1. **Collaboration:** The successful implementation of this framework depends on synergy and the open exchange of ideas and values across the innovation ecosystem. We will encourage inter-connections among the different stakeholders, coordinate knowledge transfer and offer platforms for knowledge repository that are available and accessible to all stakeholders.
2. **Adaptation:** This framework is intended to allow for flexibility and to be responsive to global innovation

A few sectors have been identified that could benefit from a robust knowledge economy. These have been grouped and

trends, emerging technologies and national priorities. The framework offers a sector agnostic approach to supporting innovation within the ecosystem.

3. **Experimentation:** The framework intends to encourage the open generation and implementation of ideas. This will allow for quick learning from what has failed and quick realization of the benefits from those that work.
4. **Inclusion:** Every participant within the national innovation ecosystem irrespective of status is encouraged to participate in the innovation process. The framework aspires to make available the resources necessary to generate these ideas, test and eventually adopt them.

presented as part of a larger sector segment as highlighted in the table below

| Sector Segment | Sectors |
|----------------------|--|
| Economic Activity | <ul style="list-style-type: none"> • Manufacturing • MSME Sector |
| Social Wellbeing | <ul style="list-style-type: none"> • Health • Housing and Settlement • Creative Economy |
| Green Transitions | <ul style="list-style-type: none"> • Renewable Energy • Agriculture |
| Applied Technologies | <ul style="list-style-type: none"> • FinTech • BioTechnology • Digital Economy |

Table 5.0: Sectors with the highest potential to benefit from a knowledge economy based on a strong national innovation ecosystem

The framework proposes specific goals for each of the ecosystem pillars that are expected to increase the vibrancy of the national innovation ecosystem. The following section addresses the goals

in each pillar by highlighting some of the key initiatives under each pillar that will be pursued over the next 10 years.

4.1 Human Capital

The framework proposes to support the development of skills relevant to innovation that can be adopted across multiple economic sectors. The masterplan intends to strengthen mechanisms to increase the size of the skilled workforce with relevant innovation competencies to support national development priorities and that is competitive at the global level. This is in response to the windows of opportunity identified within the human capital pillar.

This will be done through 3 main initiatives

4.1.1: Mainstreaming Innovation among policy makers

The institutionalization of innovation across the entire government is important to the delivery of the GoK's development goals. KeNIA in collaboration with other partners intends to design an innovation curricular that will be delivered to senior policy makers. KeNIA intends to have the curricular ready for deployment before the end of the 2024 fiscal year. The implementation of the program will as much as possible adopt a physical delivery of an applied learning approach. The workshops will be geared towards bringing adult-centered innovation learning to ministries, departments and agencies (MDAs) to strengthen appreciation of innovation principles while applying them to an active opportunity within their sphere of influence. The success of the program will be measured by the number of successfully designed and implemented innovation driven solutions adopted by the trained ministries, departments and agencies (MDAs).

The goal is to have each institution initiate at least 3 programs per financial year over the next 10 years. KeNIA estimates the successful implementation of this initiative to require an estimated USD 20 Million over the next 10 years

4.1.2: Evolving education at the university level

With the ongoing generational shift in mindset towards work and the evolving needs of the labour market. Universities are optimally placed to pioneer alternative skills development through the programs on offer at their institutions.

KeNIA has established the Kenya Network of Entrepreneurial Institution Leaders (KNEIL). KNEIL is a network of Kenyan institutions of higher learning created to encourage & grow their potential to develop, promote, nurture and drive sustainable innovation & entrepreneurial ecosystems within the institutions and by extension the country. Working through the KNEIL, KeNIA intends to strengthen mechanisms to commercialize research and ideas in institutions of higher learning. Further, the innovation agency will support the introduction of innovation focused courses such as Venture Based Courses in these institutions.

Venture Based Curricular would empower students to focus on the development of entrepreneurial ventures as the main requirement of attaining their degree qualification. The goal is to have the Council of University Education (CUE) approve the first venture based curricular before the end of the 2024 fiscal year. The success of this initiative will be measured by having at least 80% of the institutions of higher learning offer a venture-based degree program by the year 2033. KeNIA estimates that the successful roll out of venture-based programs in Kenyan universities will cost an estimated USD 10 million over the next 10 years.

4.1.3: Presidential Innovation Fellowship Program

Aspiration 6 of the African Union's Agenda 2063 envision an Africa, whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children. Kenya must look to utilize the demographic dividend its youthful population presents.

Intentional interventions should be implemented should that would tap into the optimism and energy of the young people who are looking to contribute towards the socio-economic development of their country. The Presidential Innovation Fellowship will be a 12-month human centered design program that would tap into this optimism and have annual cohorts of young people design solutions for immediate adoption into the national development agenda. The program will competitively select cohorts of 500 young people annually.

This cohort will be made up of teams of 5 where each team will adopt and work towards resolving one of 100 case studies designed by the program in collaboration with institutions in the public and private sectors. These case studies will consist of at least 47 cases (1 per county) from the counties. The young people will utilize design thinking principles to produce and implement their solutions to their case studies with the support of the program. KeNIA in collaboration with stakeholders with leadership from the Executive Office of the President will roll out the program before the end of the 2024 fiscal year.

The success of the Presidential Innovation Fellowship Program will be measured by the number of young people that will successfully go through the program acquiring the need innovation and entrepreneurship skills. The program will also be measured by the number of designed solutions that will be implemented and the direct impact these solutions create at across the country. KeNIA estimates that the Presidential Innovation Fellowship Award would require USD 30 million over the next 10 years to be successfully implemented.

4.2 Access to Finance

The framework proposes to increase the access to financing for stakeholders and the operations of the national innovation ecosystem. The masterplan intends to establish mechanisms to make available financial resources to stimulate operations across all the other pillars of the national innovation ecosystem.

This is in response to the windows of opportunity identified within the access to finance pillar. This will be done through the establishment of an innovation funding program.

The NRF has so far played a crucial role in supporting researchers to carry out valuable research that has produced useful findings. There is however a need to complement the efforts and achievements of the NRF by establishing a national innovation funding program that would help bring these research findings to market. The

national innovation funding program will mobilize financial resources from the public sector, private sector and development partners. The national innovation funding program will be managed by a secretariat and have a board of advisors made up of stakeholders from within the national innovation ecosystem.

The goal is to raise a minimum of USD 100M by the end of the 2024 fiscal year and have the national innovation funding program operational by the end of the 2025 financial year.

The success of the funding program will be measured by the number of startups funded, innovation policies financed, the number of county centers of excellence funded and the number of research ideas brought to market. The goal would be to bring at least 1,000 inventions to market, and create 10 unicorns by the year 2033

4.3 Access to Markets

The framework proposes to promote business growth as the principal goal under the access to markets pillar. Though Kenya is a signatory to both regional and global trade treaties, startups have found it difficult to secure access to growing markets outside Kenya. The attainment of the goal will be dependent on the successful implementation of the national innovation repository goal under the infrastructure pillar.

This goal is in response to the windows of opportunity identified within the access to markets pillar through the participatory process adopted in the development of the masterplan.

This will be done through 2 main initiatives;

4.3.1: The National Soft Landing Program

The masterplan proposes the creation of a national soft-landing program. The program would seek to create awareness among the national innovation ecosystem stakeholders on the various international market opportunities available to them through trade agreements that Kenya has in place. The program will also endeavour to provide the necessary networks and support for local enterprises to enter, establish and thrive in these new markets.

This program will be implemented in collaboration with the Ministry of Foreign Affairs and Diaspora Affairs, Ministry

of Trade, Industry and Investments and the Ministry of East Africa Community, ASALs and Regional Development.

The national soft-landing program will include a capacity building initiative that will seek to empower the stakeholders within the national innovation ecosystem with the knowledge to increase their awareness of and readiness to access these new markets. This initiative will target innovation-based enterprises that would have registered onto the national enterprise database. Registration would include providing details on the current target market and future target markets. An analysis of these needs would allow for the preparation of relevant knowledge sessions around the specific markets.

The market awareness creation program will adopt both physical and virtual delivery channels to maximize the reach of the training programs. The intention is to have at least 12 sessions annually depending on the regular needs assessment.

The success of this initiative will be measured by how many of the enterprises on the national repository enter new markets annually and the economic value that these enterprises and the nation derive from their operations in these markets. KeNIA estimates that the successful operationalisation of the national soft-landing program would require around USD 5 Million over the next 10 years.

4.3.2: Innovation Trade Tours

This masterplan recognizes the need of Kenyan innovation-based enterprises to obtain exposure to other national innovation ecosystems around the world. The exposure to these ecosystems would present several opportunities including among others

1. The opportunity for the stakeholders to meet peers from the other national innovation ecosystems with whom they could benchmark and collaborate with on future initiatives.
2. Exposure to alternative processes, standards and technologies that could be adopted by our national innovation ecosystem to improve the local knowledge economy.
3. Explore new market opportunities for the commercialization of startups and research of our national innovation ecosystem.

This initiative will identify an initial set of markets across the continents based on the maturity of these innovative ecosystems, their ranking on the GII and the opportunity to address a specific growth area.

This initiative is expected to have started before the end of the 2024 fiscal year and have at least 2 tours annually. The success of this initiative will be measure by the number of innovation-based joint ventures created annually

KeNIA estimates that the successful operationalization of this initiative will require USD 5 Million over the next 10 years.

4.4 Infrastructure

The framework proposes to increase the level of startup and research commercialization as the principal goal under the infrastructure pillar. Though we have innovation centers across the country, intentional collaborative efforts between KeNIA and the national innovation ecosystem stakeholders need to be made to raise the standards of our innovation centers. This is to be done with the goal of increasing the number and quality of knowledge outputs. This will consequently improve Kenya's position as a leading knowledge economy. This is in response to the windows of opportunity identified within the infrastructure pillar through the participatory process adopted in the development of the masterplan.

This will be done through 3 main initiatives;

4.4.1: National Innovation Repository

Innovation is happening across the country daily. However, we do not have a central database of all innovation-based ventures in the country. This limits the capacity of the coordinating agency to make available adequate resources to catalyse the success of these ventures require to be successful. The lack of such a repository also limits the visibility of these ventures from other stakeholders across the other ecosystem pillars who may have the capacity and intention to support the ventures. This masterplan

proposes the establishment of a central national innovation repository for all innovation-based ventures in the country. To increase the likelihood of having a comprehensive database, the database will be done in collaboration with relevant stakeholders.

These stakeholders will include innovation centers, tertiary learning institutes, association of startup and sme enablers of Kenya and association of countrywide innovation hubs among others. This National innovation repository will be instrumental in informing some of the initiatives proposed by this masterplan under the other ecosystem pillars. The goal is to have the national innovation repository fully operational by the end of the 2025 fiscal year.

The success of this initiative will be measured on the accuracy and relevance of the repository as a true representation of the national innovation ecosystem. Accuracy will attempt to have 100% of innovation-based ventures within the ecosystem registered within 2 years of being fully operational. The relevance would be assessed based on the quality of insights and knowledge that the design of the database would allow to be generated.

KeNIA estimates that the successful development and operationalisation of the national innovation repository would require USD 3 Million over the 10 years.

4.4.2: County Innovation Centers of Excellence

Kenya has a fairly equitable distribution of innovation centers across the country. Thanks to investments by public, private and NGOs. However, support is required to increase the capacity of many of these innovation centers to support the commercialisation of globally competitive innovation-based ventures.

This masterplan proposes an initiative to identify an innovation center in each county and upgrade this to an innovation center of excellence. The county innovation centers of excellence will serve as anchors of innovation at the county level. They will consolidate and disseminate global best practices in catalyzing a national innovation ecosystem, contextualize this at the county level and support other innovation centers to adopt the best practices.

This upgrade will include investments in the redesign of the physical spaces, equipment, technology infrastructure and talent to increase the offering at these centers. This initiative will be implemented in collaboration with the county governments.

The success of these county innovation centers of excellence will be measured by the number of innovation-based ventures created in the county, how many they have successfully commercialized and the direct impact these ventures have in the county.

This impact could be measured on the number of jobs created and revenues collected by the county. The goal is to have forty-seven (47) operational centers of excellence by the end of fiscal year 2026 and to have at least 2 innovation-based ventures with global operations headquartered in each of the 47 counties by the year 2033. KeNIA estimates that the establishment of the 47 county innovation centers of excellence would require USD100 Million.

4.4.3: Technology Transfer Offices (TTO)

Tertiary institutions of learning generate a substantial amount of research and development. However, the majority of these do not make it to market and remain mostly theoretical. There is a need to establish technology transfer offices at these institutions to increase the level of commercialization of research and development at the institutional level. This masterplan proposes to establish a world class TTO at tertiary institutions of learning and research centers. The TTOs are also intended to offer an additional revenue stream for the universities, TVETs and research centers. This initiative will be implemented in collaboration with members of the KNEIL network.

The TTOs are expected to inspire innovators at these institutions to invest in generation of research and development with the confidence that they will have the necessary resources to bring knowledge output to market. The TTOs will be expected to develop a minimum criterion of the innovation to determine those that would receive support from the TTO. This minimum criterion will be aspirational to innovators' institution to raise the quality of their inventions in search of globally competitive solutions.

The success of these TTOs will be measured on the number of globally competitive ventures that come out of the TTOs and the revenues raised for the institutions. This establishment of the TTOs will include investments in the design of the physical spaces, equipment, technology infrastructure and talent to increase the output of the TTOs. The goal is to have TTOs in 50 per cent of the tertiary institutions operational by the end of fiscal year 2030. KeNIA estimates that the successful operationalization of the TTOs will require USD 15 Million.

4.5 Policy

The framework proposes to coordinate national and county innovation policy development as the principal goal under the policy pillar. Through policy coordination the intention is to ensure that the policies developed at both the national and county levels consider the voices of stakeholders, are responsive to the needs of the stakeholders and are coordinated at both levels. This is in response to the windows of opportunity identified within the policy pillar through the participatory process adopted in the development of the masterplan.

This will be done through 3 main initiatives:

4.5.1 Enactment of a Globally Competitive StartUp Bill

The Kenya Startup Bill 2022 was proposed to provide a framework to create a more favorable environment for innovation. It intends to encourage growth and sustainable technological development and new employment through entrepreneurship. The proposal is currently before Parliament for consideration. This masterplan proposes to encourage more stakeholder engagement, passing and enactment of a globally competitive startup bill before the end of the fiscal year 2023/2024. This will require close collaboration with the parliamentary committees to ensure that this gets on to the parliamentary docket for discussion and adoption. In recognition of the time lapse since the drafting of the bill, it is recommended that a revision that includes additional public participation is considered and adopted.

The success of this initiative will be measured by the enactment of a globally competitive Startup Bill, effective sensitization of all stakeholders in the national innovation ecosystem and the improvements in the regulatory environment for innovation-based startups that it would create. These improvements can be assessed through ease of doing business measures such as ease of registration.

4.5.2 National and County Innovation Policies

KeNIA has prepared an initial draft of a national innovation policy with the objective to enable review, development and implementation of a national innovation ecosystem and adopt a systemic approach to successfully deal with the socio-economic challenges of the nation.

The National Innovation Policy Framework (NIPF) recognizes the existence of a large number of policies and programmes in support of the Kenya Innovation Ecosystem. It, therefore,

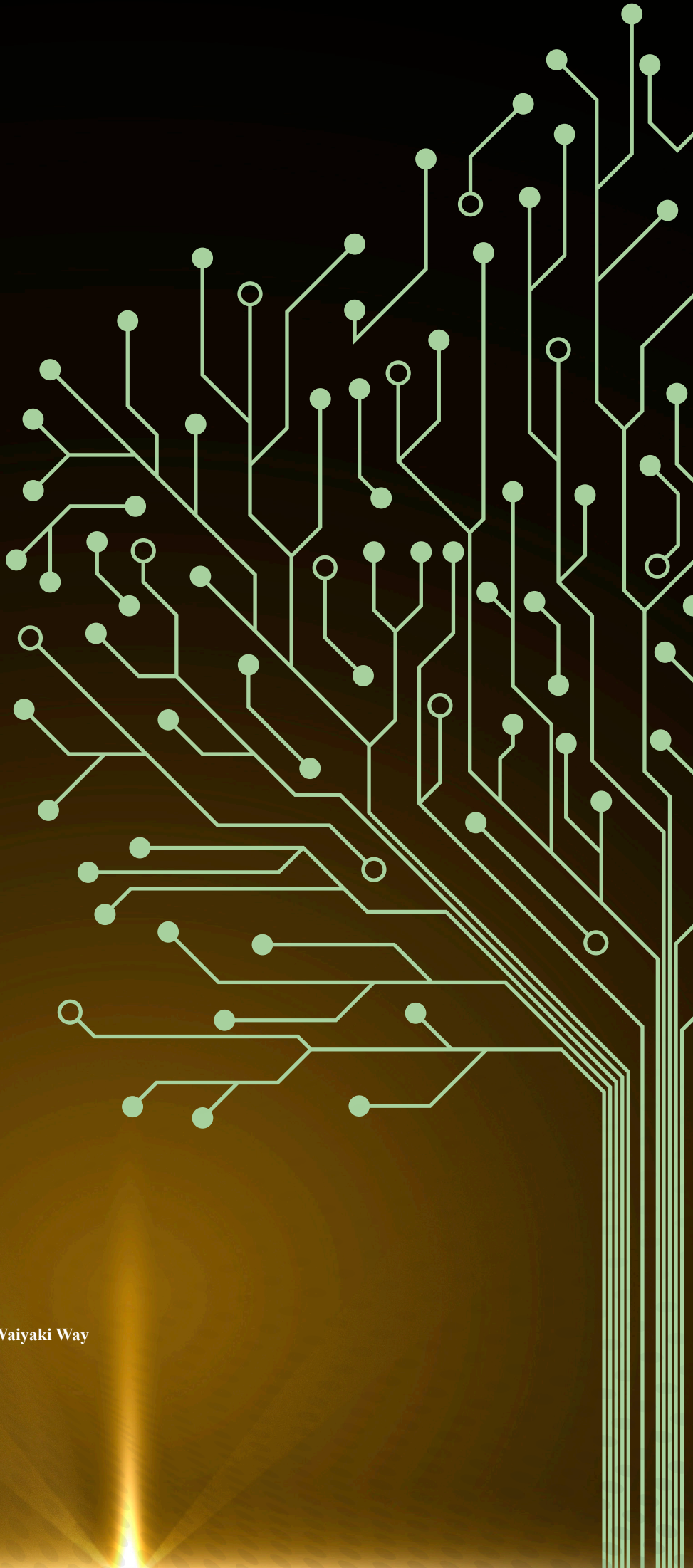
1. Provides a coherent structure through which existing policies may be reviewed to ensure strong synergies between them and that their collective implementation shall drive the country towards attainment of the aspirations in Vision 2030.
2. Enables identification and correction of overlaps and contradictions among the current policies,
3. Enables identification of gaps that can be filled through development of new targeted policies and programmes, and
4. Is a living document to be reviewed and improved upon in response to local and global changes.

The goal is to have the policy proposal presented before parliament and adopted by the end of the year 2024. The support for counties to also implement similar but localized innovation policies to anchor innovation at the county level is also important to this goal. KeNIA targets to support at least 70 per cent of the counties to have enacted a suitable innovation policy by the end of fiscal year 2027.

4.5.3 National Intellectual Property Policy

The protection of the intellectual property developed by the knowledge economy is essential for confidence within the national innovation ecosystem. Kenya has not yet operationalized a national intellectual property policy.

This national IP policy remains at draft level. This masterplan proposes to encourage the passing and enactment of this policy before the end of the fiscal year 2024. This will require close collaboration with the parliamentary committees to ensure that this gets on to the parliamentary docket for discussion and adoption. In recognition of the time lapse since the drafting of the bill, it is recommended that a revision that includes additional public participation is considered and adopted. The success of this initiative will be measured by the enactment of the policy, the sensitization of the national innovation stakeholders, the number of patents and any other forms of intellectual property rights that will be registered within the national innovation ecosystem over the next 10 years



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