# THE KENYA NATIONAL INNOVATION OUTLOOK 2022

AFRICA RESEARCH & IMPACT NETWORK
UKaid from the British people
Kenya National Innovation Agency

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# Background

# Rationale of the Kenya Innovation Outlook 2022

The KIO 2022 provides a foundation for tracking innovation processes and activities thereby strengthening the coordination and investments in strategic innovative activities.

**KENYA INNOVATION OUTLOOK 2022**

An integrated framework for effective governance of innovation activities

- ✓Surveillance tool for identifying niches for strategic investments and economic growth
- ✓A Learning and feedback framework that shows innovation opportunities, gaps and challenges
- ✓A tool for profiling Kenya's best – including contextual and important activities in the informal sectors often overlooked by the more general global frameworks
- ✓A step towards strengthening and organising Kenya's position in the regional and global STI engagements and resource mobilisation

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# Objectives

- The development of the Inaugural Kenya National Innovation Outlook 2022 was commissioned by the East Africa Research and Innovation Hub (EARIH) in partnership with KeNIA.
- The main goal was to develop a comprehensive overview of Kenya's innovation landscape and its evolution over the past 5-10 years.
- The report aims to inform KeNIA and other stakeholders, including FCDO, ST&I policy makers, analysts, and potential investors about the trends and opportunities in the Kenyan innovation landscape.

## The Outlook Development Process

The study involved nine (9) key steps focused on conceptual understanding, data collection and analysis, and co-creation of sets of relevant indicators based on stakeholder consultations and global innovation frameworks

# Concepts & Definition

# Defining Innovation

Utility

Translatability

Scalability


Novelty

Impact

**Innovation: Creation of new or distinct improvement of products and processes in formal and informal settings that have disruptive positive effects on the economy, and the social well-being of the citizens".**

**Process innovation**
New/improved methods
New/improves approaches

**Product innovation**
New novel ideas
New/improved products platforms

**Organisational innovation**
New/improved policies
New/improved structures

**Platforms:** academia, manufacturing industry, hubs, economic zones, community-oriented organizations, start-ups

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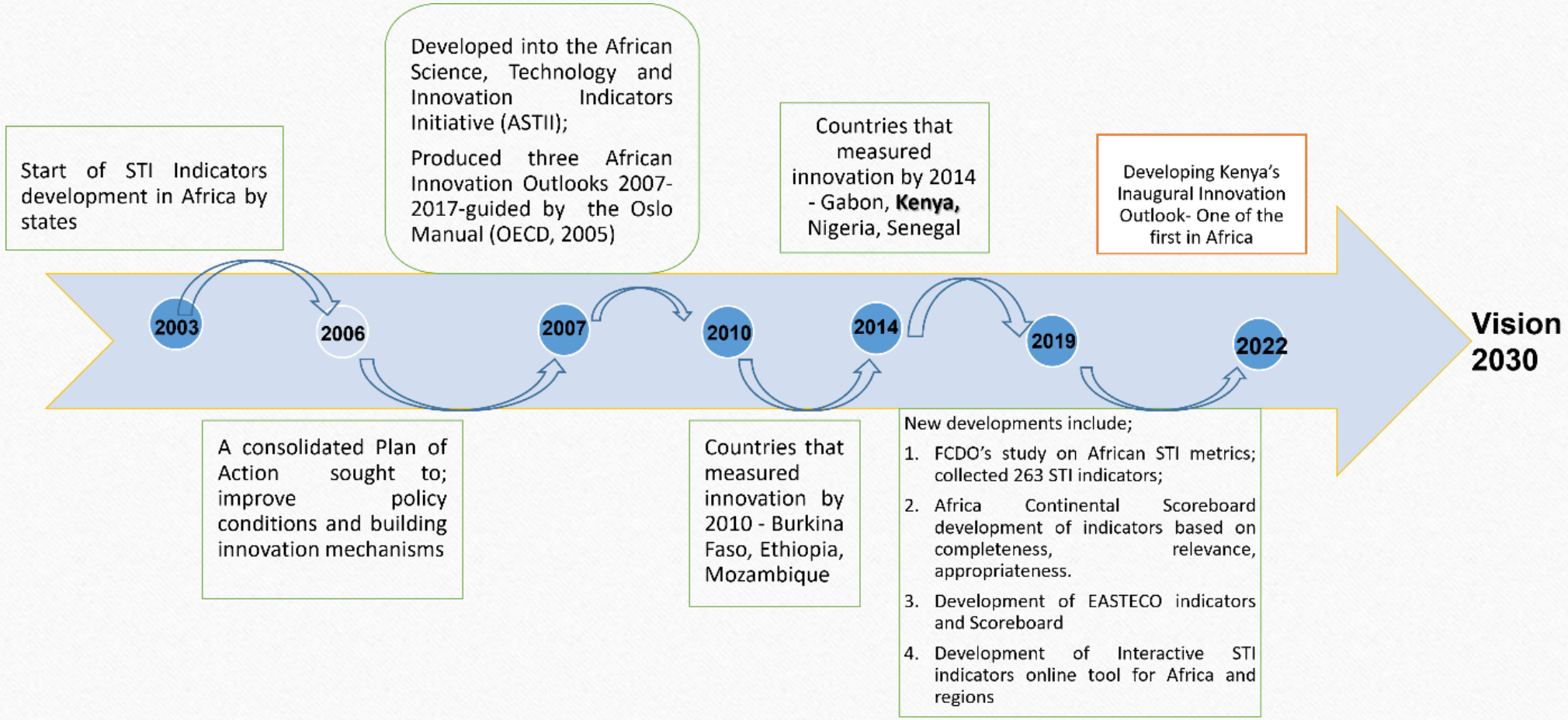
# National Innovation System

*"is a network or a system of interacting government and private companies (large and small), universities, government bodies whose activities and relations lead to the emergence, import, perfection, and spread of new technologies within national borders".*

- ✓ The cooperation of these organizations can be technical, commercial, legal, social, and financial, while the goal is the development, security, financing, and regulation of new areas of knowledge and technology.
- ✓ The key point in this definition is the relations between institutions and resultant impacts.

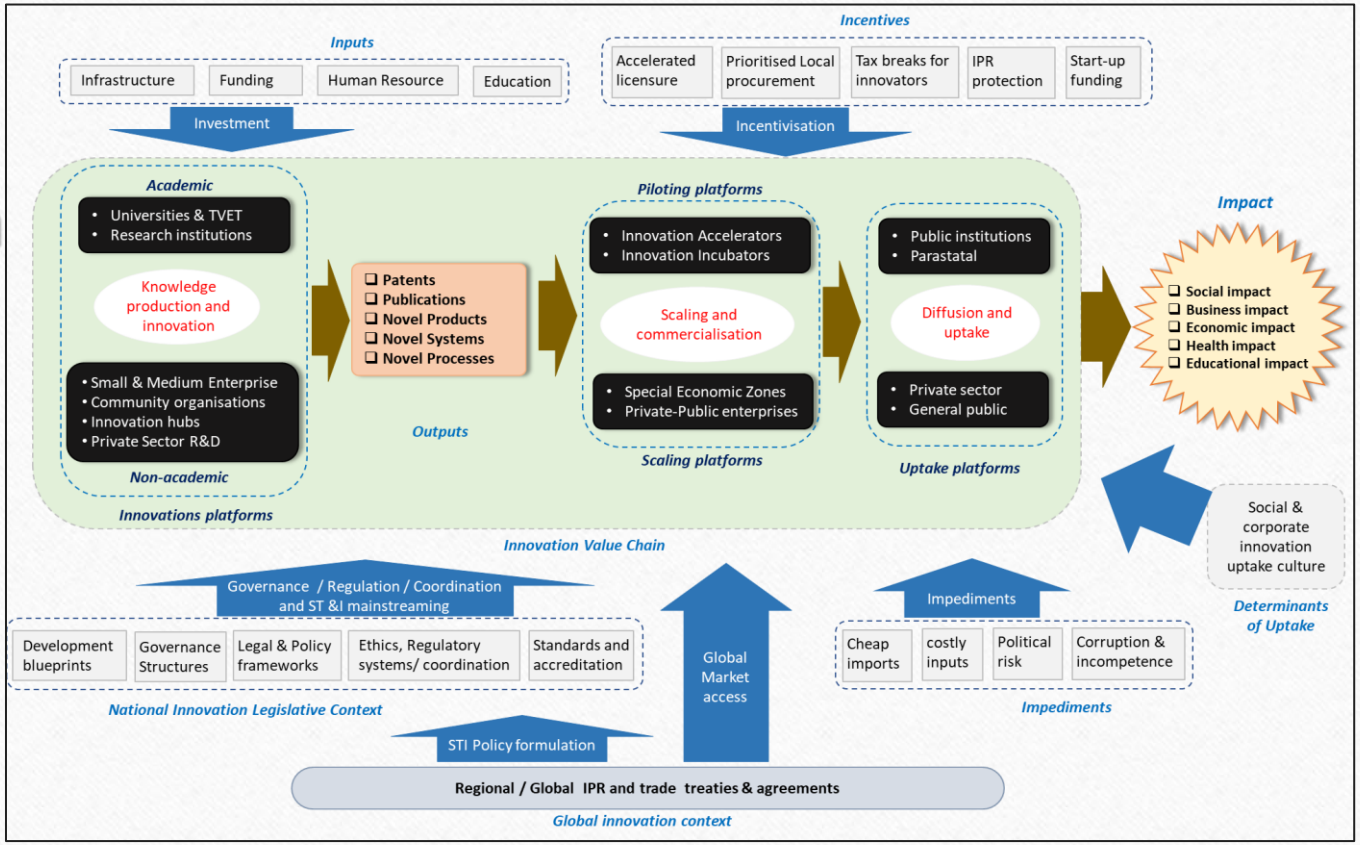
# KIO 2022 Builds on recent metrics studies



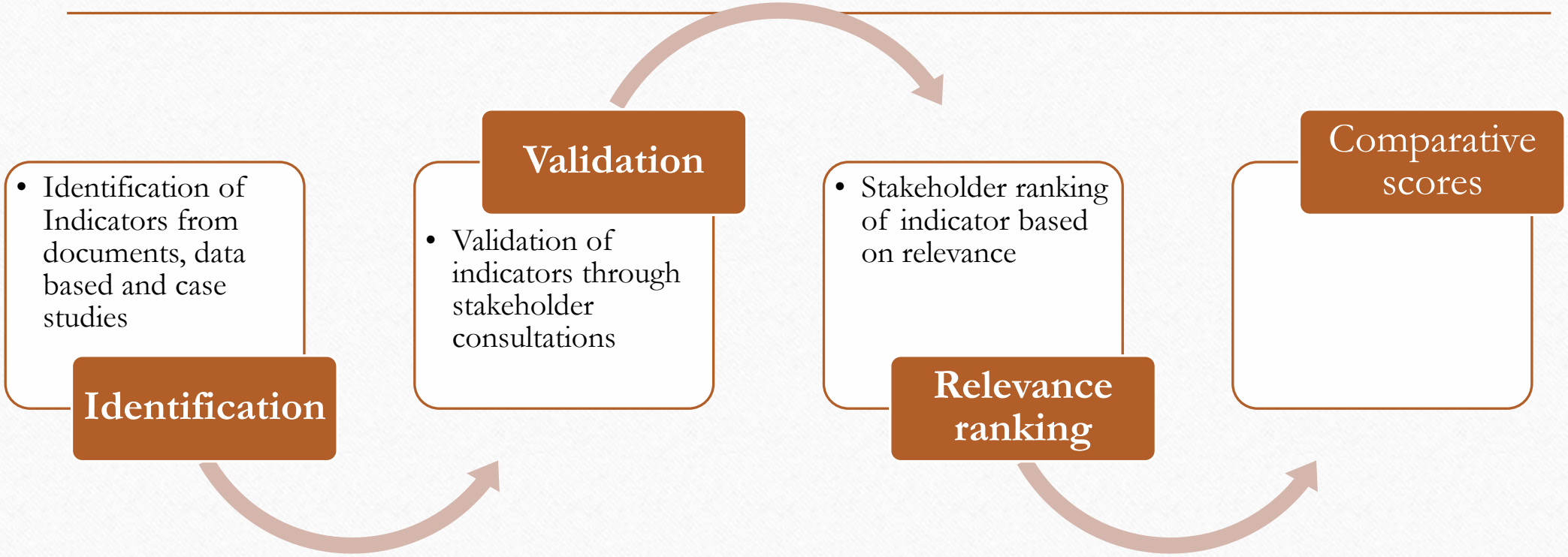
# Methodology

# The KIO framework and data

The national innovation system is complex. For evaluation purposes, this can be better understood through a framework that systematically unpacks the relevant domains, sub-domains, and activities in the innovation process.



# Scoreboard development Approach



# DATA COLLECTION METHODS

Desktop Review


Value Chain Survey


Case Study

# The Kenya Innovation Outlook

# Data Domain & Subdomains

**National / global economic and legislative context**

- STI in Development blue prints
- Legal and policy framework
- Governance Structure
- International treaties

**Innovation Value Chain**

- Innovation platforms
- Outputs
- Commercialisation
- Diffusion and uptake

**Inputs/ investments**

- Investment in ST&I Infrastructure.
- Budgetary allocation to ST&I
- Human resource
- Education

**Incentives**

- Financial/funding
- Process
- Promotion initiatives
- Awards

**Impediments**

- Structural
- Incompetence
- Politics

**Impacts**

- Social
- Economic
- Cultural/political

# KIO 2022 Indicators

Globally drawn- comparable

**Global data bases**

**263** indicators aligned to the GII

A draft report

Relevance test

**Stakeholder indicator validation workshop**

We want Locally-led indicators

We want a non-academic report

Locally guided- context relevant but subjective

**Localisation of indicates- with Local teams and stakeholders**

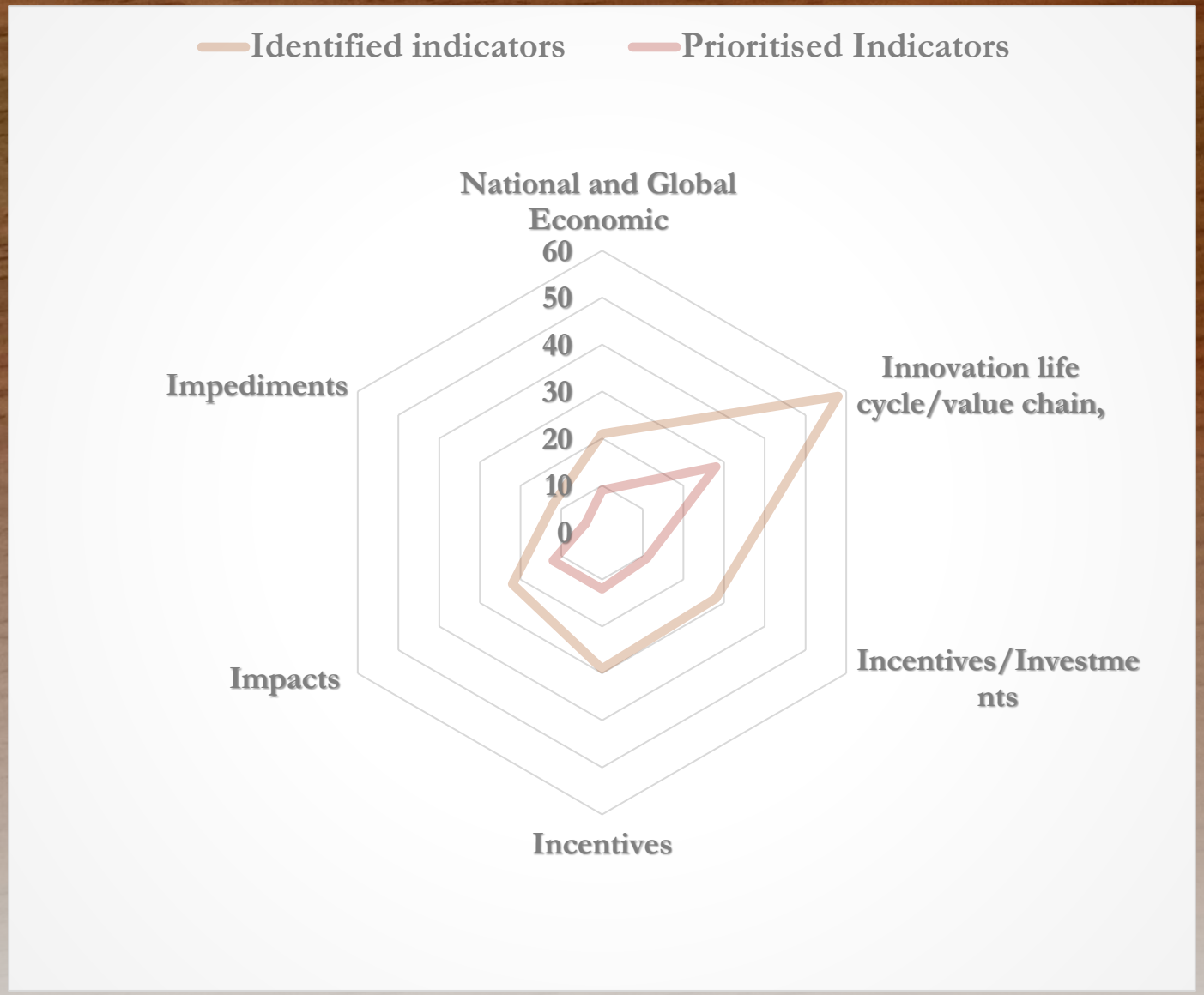
**172** indicators

**Stakeholder ranking**

**77 prioritised indicators**

**Final report**

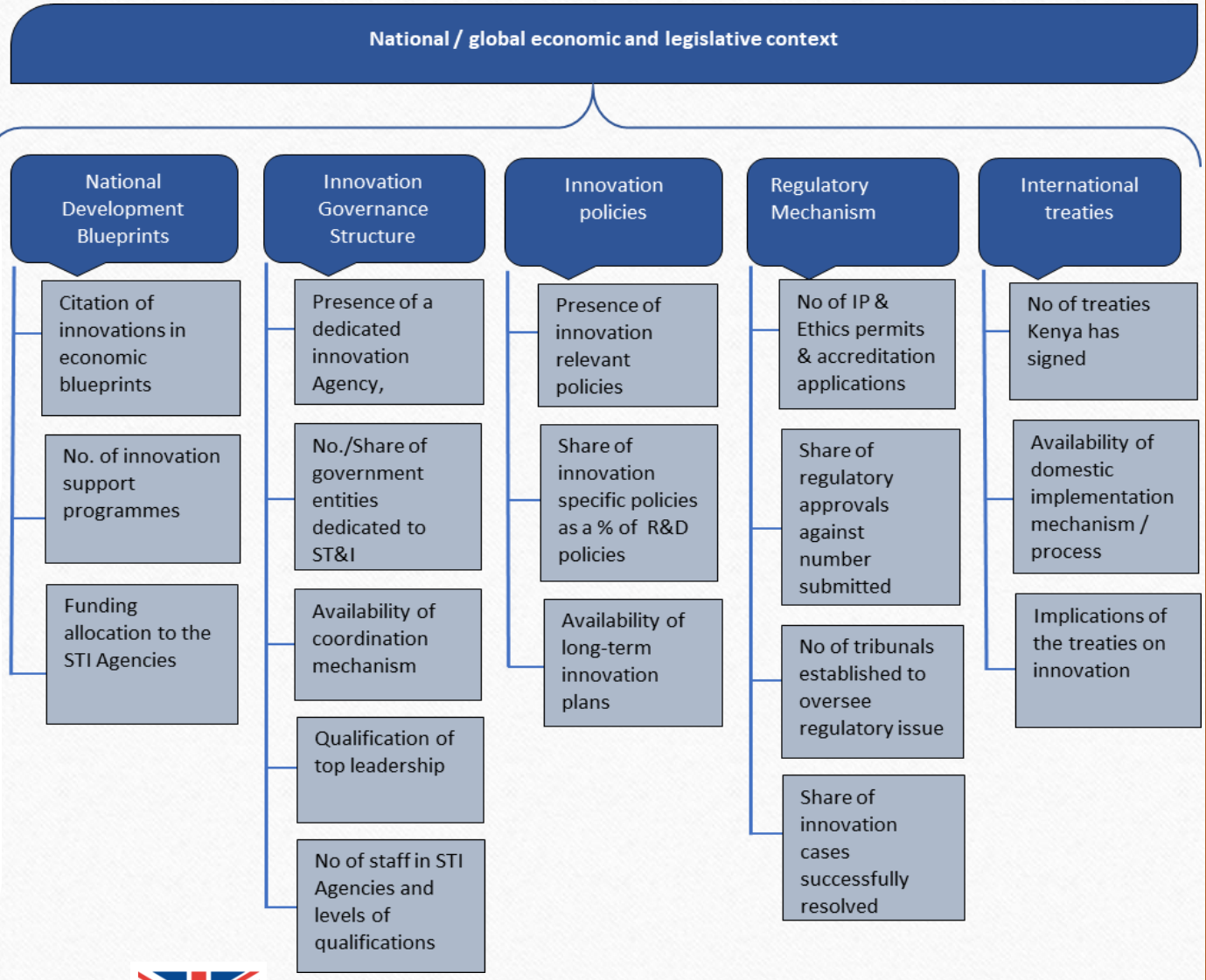
# NO. OF INDICATORS IDENTIFIED AND PRIORITIZED PER DOMAIN



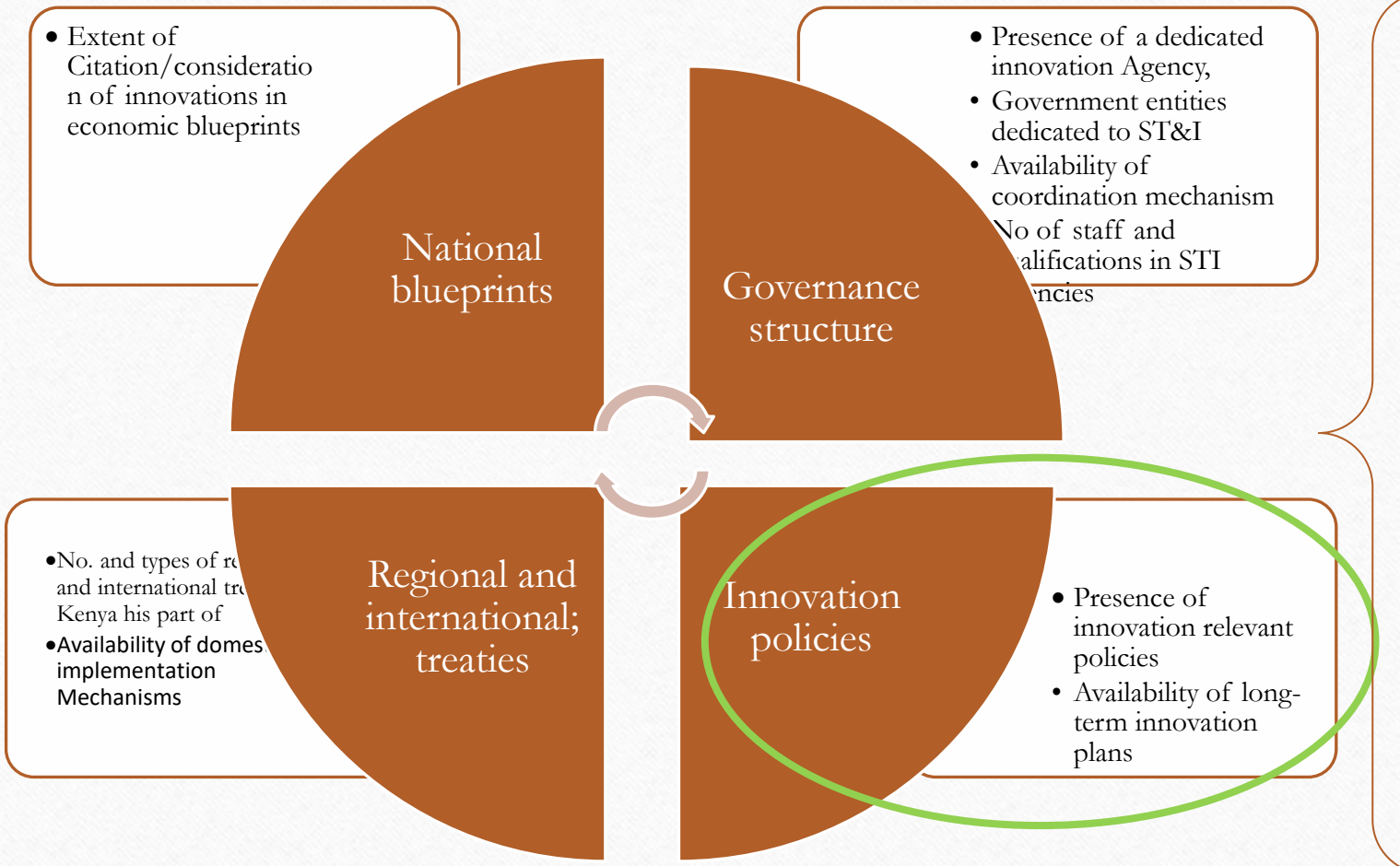
# Domain 1: National and Global Economic Context

Even though innovation is highlighted in Kenya's Vision 2030 and other blueprints, there is no consolidated visibility of innovation agenda in these blueprints. A National Innovation Masterplan could fill this gap.

Kenya's innovation governance structure is concentrated on the regulatory functions and less on the facilitative functions (e.g., marketization, funding etc.). Providing dedicated support to the lead Agency, the Kenya Innovation Agency, could steer facilitate more innovation and less regulatory restrictions.



# Domain 1: National and Global Economic Context



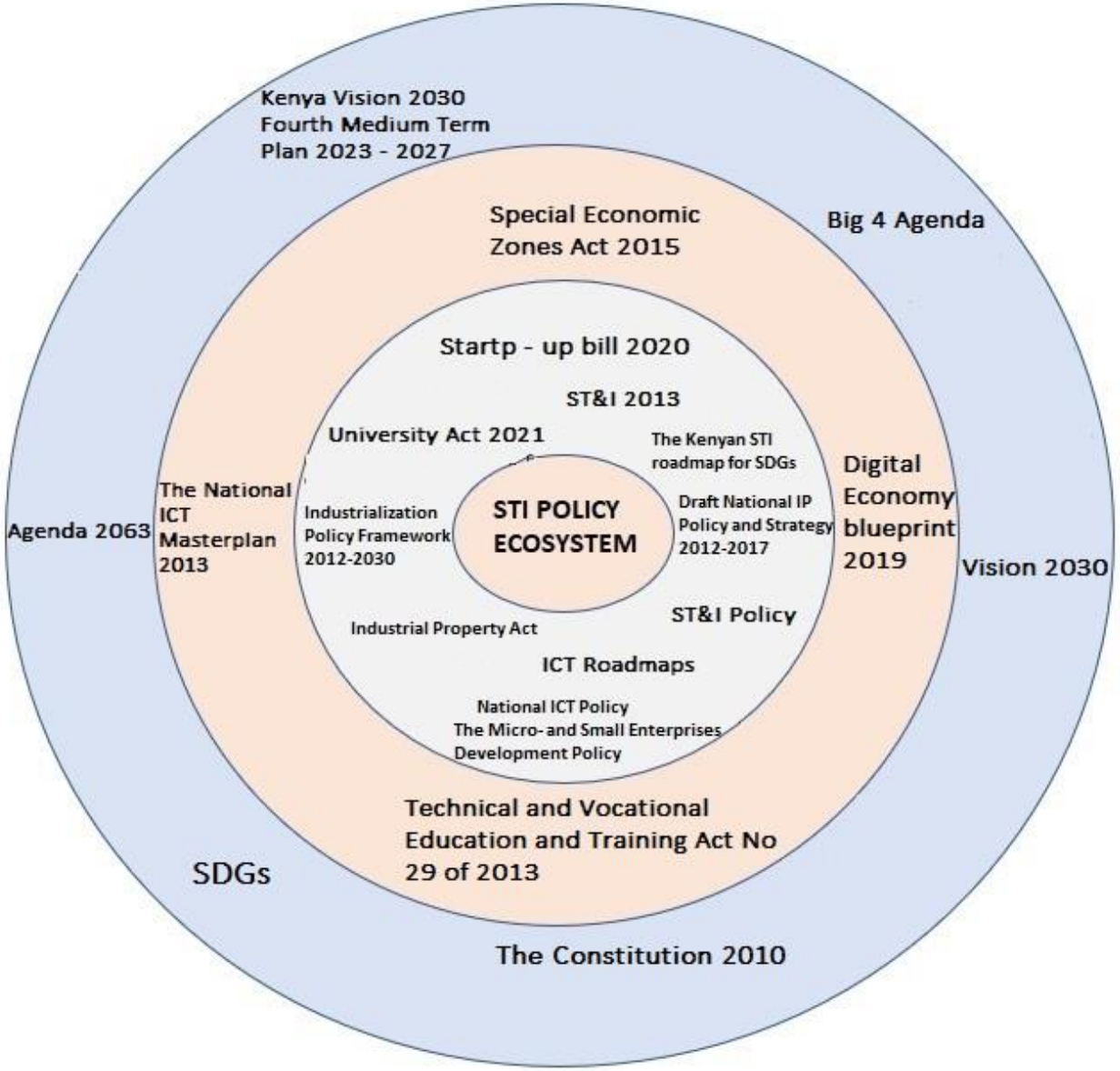

**Key emerging**

Innovation cited in the national blueprints and sectoral strategies but no consolidated visibility of innovation agenda.

Strong policy environment grounded on ST&I Act 2013. Strong on discovery and weak on development- commercialisation

Dedicated innovation agency is key. Most Agencies are regulatory and less on facilitative functions

# Policies

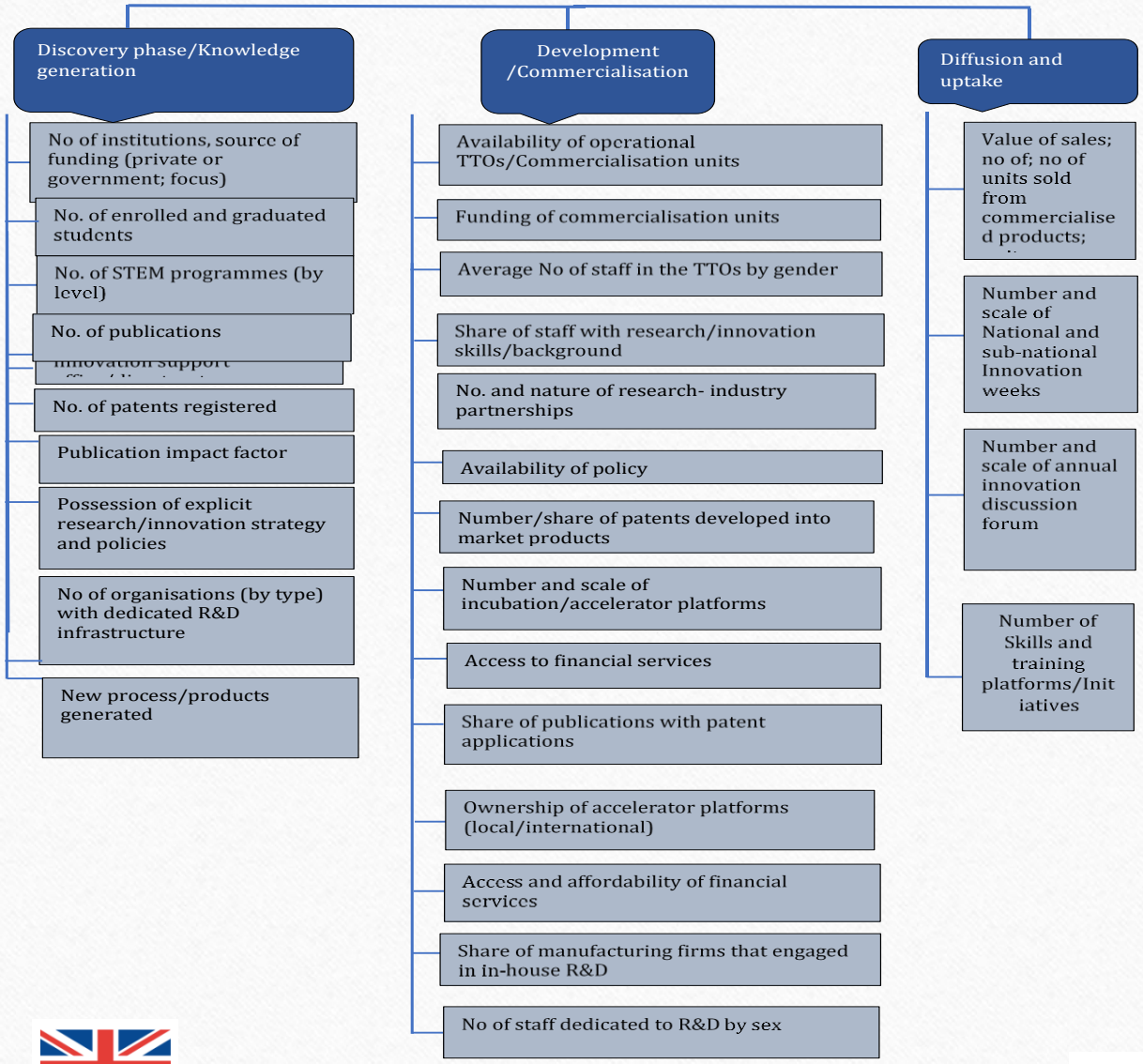

Kenya Vision 2030
Fourth Medium Term
Plan 2023 - 2027
Special Economic
Zones Act 2015
Big 4 Agenda
Startp - up bill 2020
ST&I 2013
University Act 2021
The Kenyan STI
roadmap for SDGs
The National
ICT
Masterplan
2013
Agenda 2063
Industrialization
Policy Framework
2012-2030
STI POLICY
ECOSYSTEM
Draft National IP
Policy and Strategy
2012-2017
Digital
Economy
blueprint
2019
Vision 2030
ST&I Policy
Industrial Property Act
ICT Roadmaps
National ICT Policy
The Micro- and Small Enterprises
Development Policy
Technical and Vocational
Education and Training Act No
29 of 2013
SDGs
The Constitution 2010

# Domain 2: Innovation life cycle/value chain

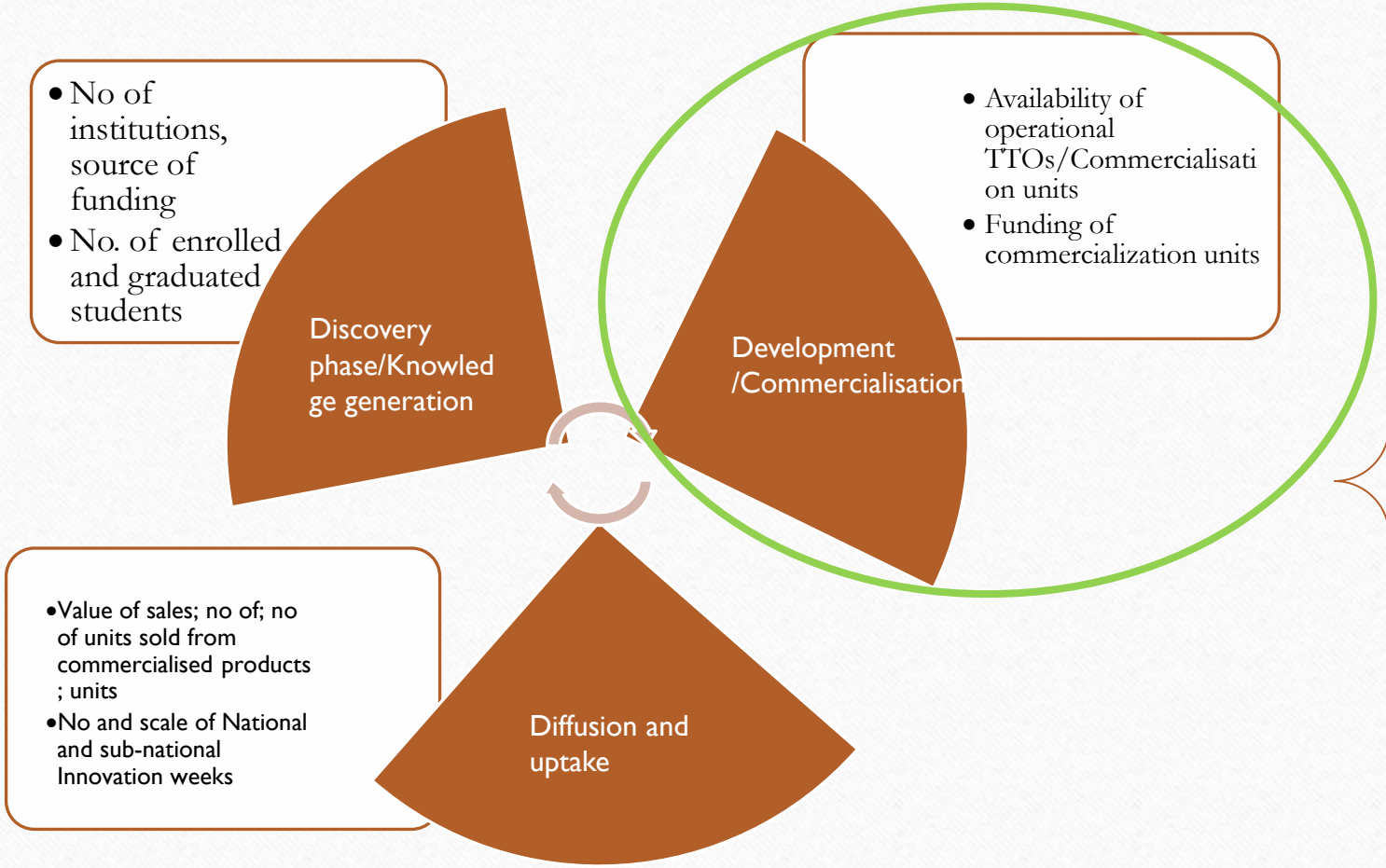
Kenya's knowledge-producing platforms are increasing in number but the number of innovation-relevant knowledge is still very minimal thus need for innovation-specific courses and academies to strengthen the production of innovation-relevant knowledge.

Commercialisation is key part of innovation outlook. Platforms for commercialising knowledge products are becoming prominent but are small-scale, uncoordinated and not properly linked to the knowledge producing platforms

Kenya has a number of platforms that support innovation diffusion /uptake through awareness creation but still needs initiatives that promote investments as part of diffusion/uptake through market and product expansion.



# Domain 2: Innovation Value Chain:




**Key insights**

Good outlook in the discovery phase with increasing number of knowledge producing platforms and enrolment rates.

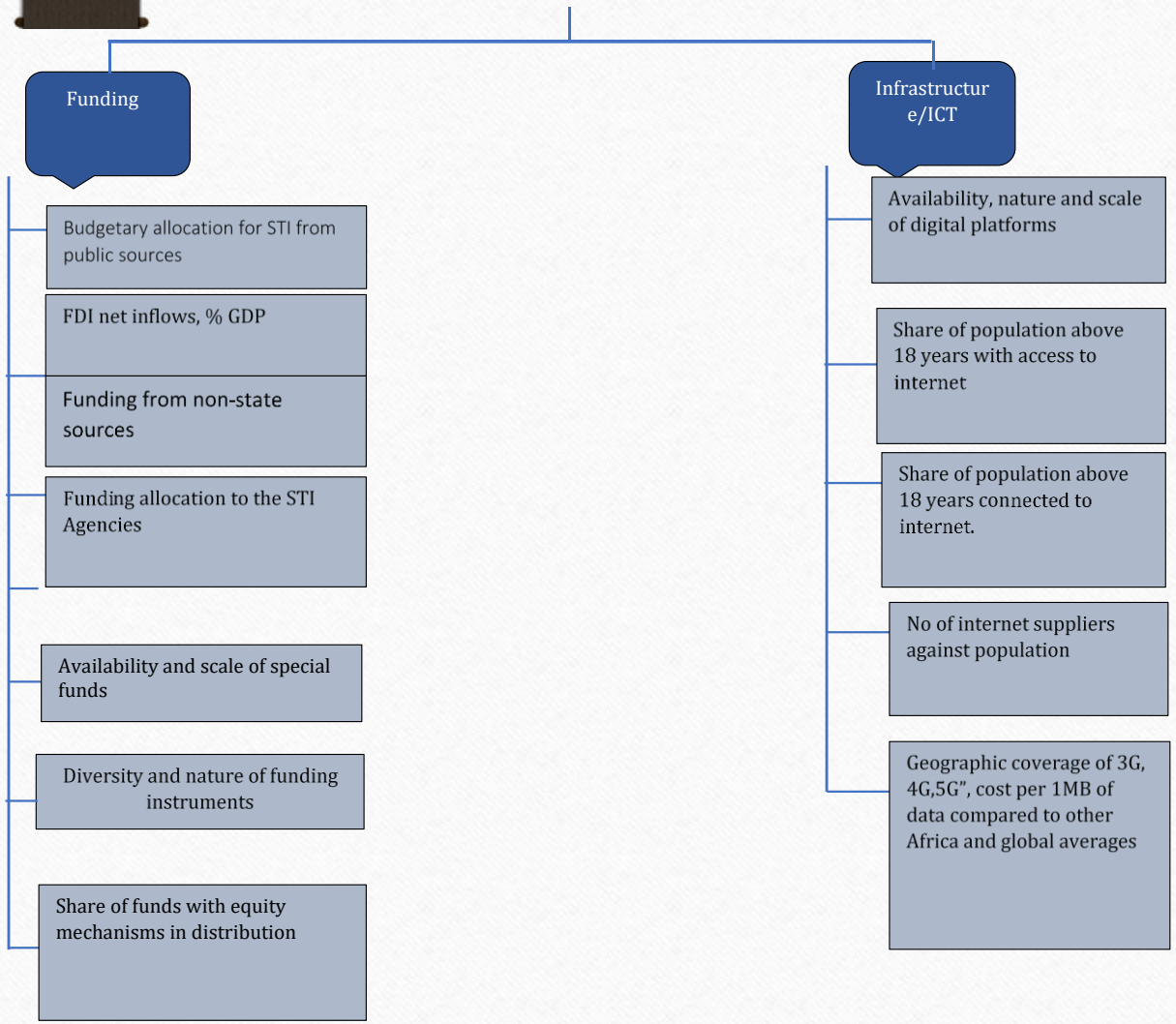
Platforms on development exist but are small-scale, uncoordinated and not properly linked to the development platforms

Commercialisation is a frontier sub-domain is ranked highly by stakeholders.

# Domain 3: Investment

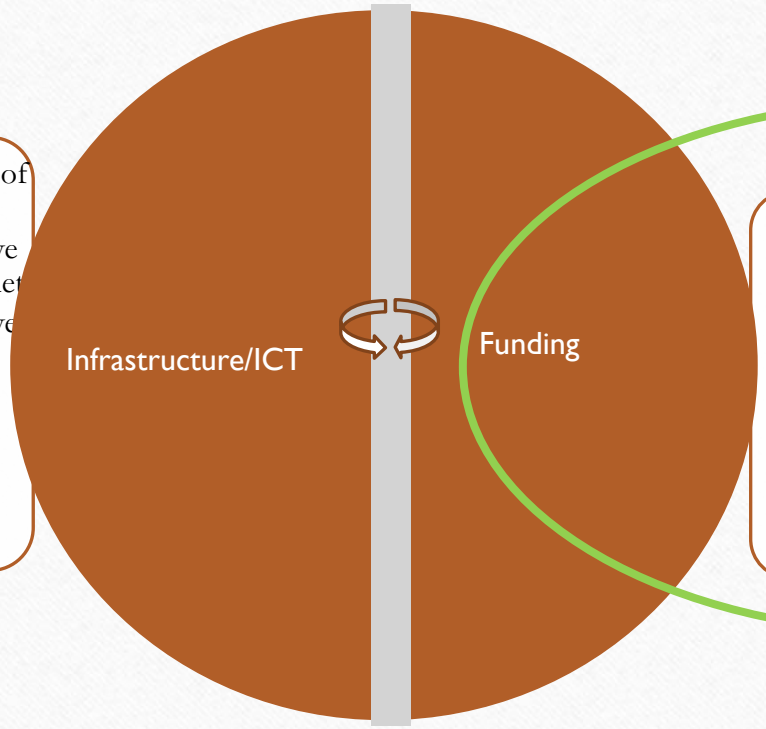
The National Budgetary Allocation to ST&I is inadequate. Nevertheless, Kenya enjoys more inward Foreign Direct Investment (FDI) in Africa.

Kenya is investing in infrastructure as an enabler of innovation but there is need to facilitate the utilisation of this infrastructure across sectors.



# Domain 3: Investments

- Availability, nature, and scale of digital platforms
- Share of the population above 18 years with access to internet
- Share of the population above 18 years connected to the internet.
- No of internet suppliers against population




- Budgetary allocation for STI from public sources
- Funding from non-state sources differentiated by private and non-profit sources
- FDI net inflows, % GDP (focusing on the innovation agenda)

## Key insights

National budgetary allocation to ST&I remains low and

Increasing infrastructure investments around digitisation but need to catalyse utility across sectors.

There is increasing foreign investments and funding of hubs and start-ups in Kenya

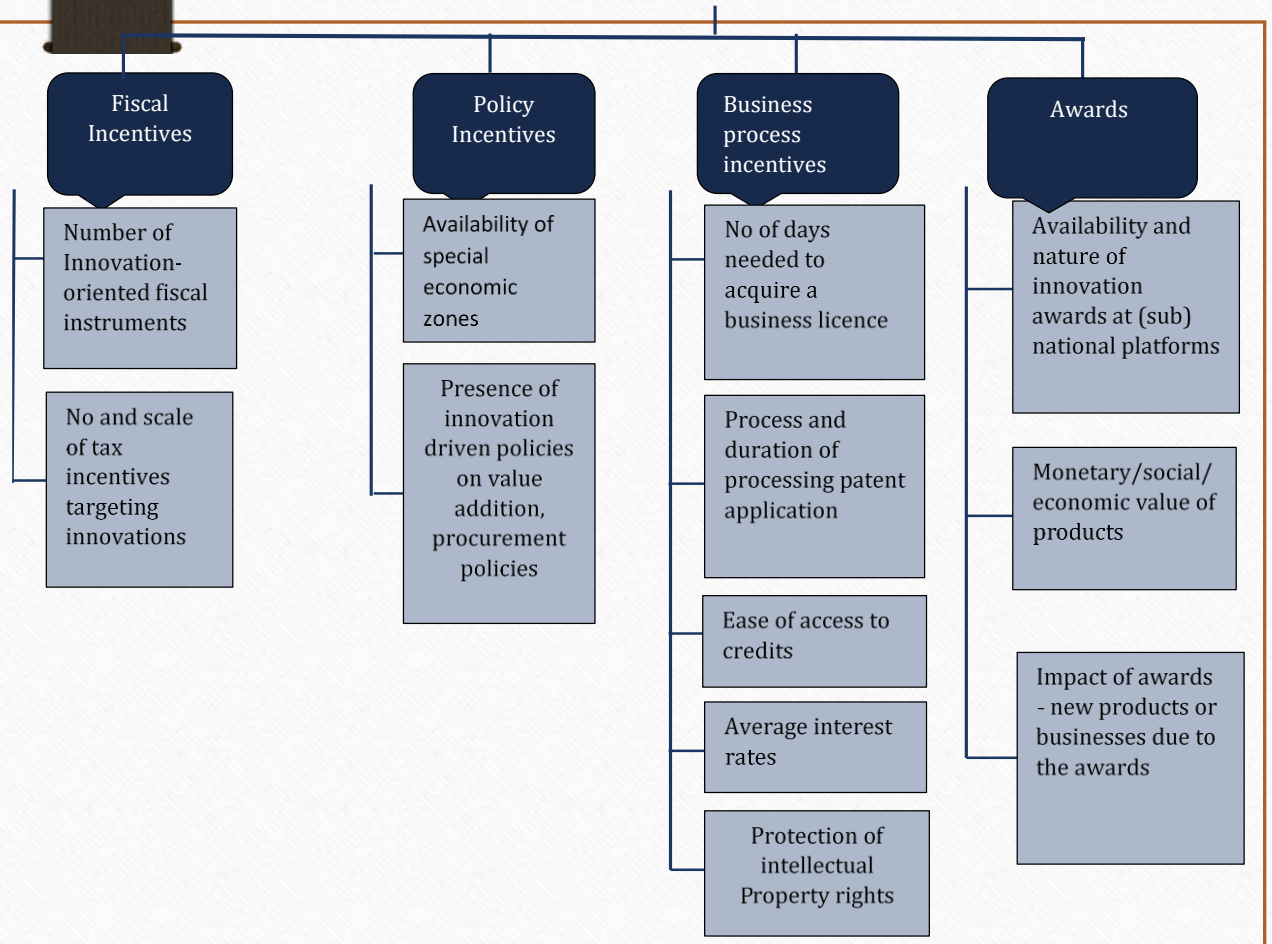
Financial investments is a frontier sub-domain as it's a a critical enabler of innovation actions across all domains

# Domain 4: Incentives

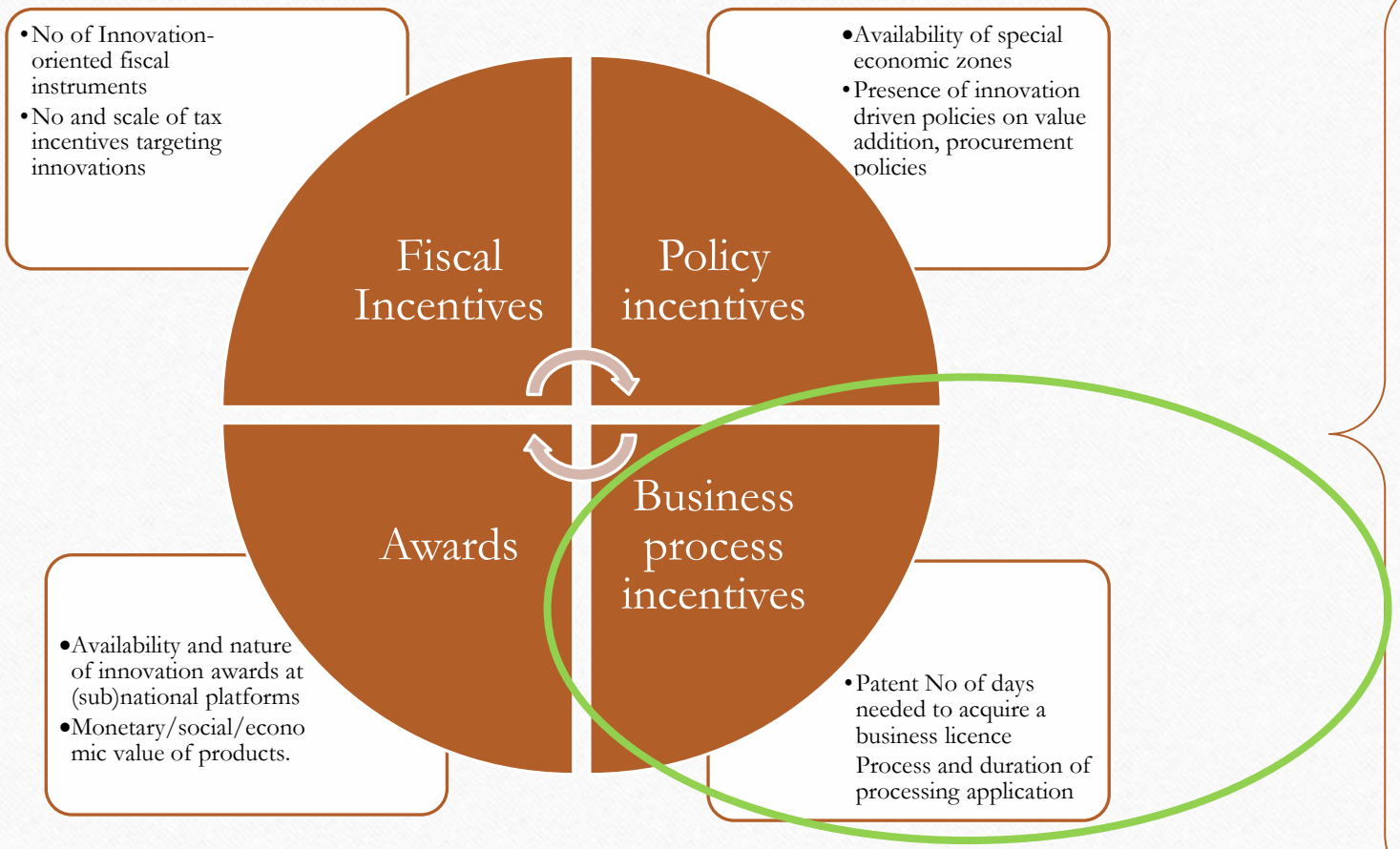
Even though Kenya anchors its growth on innovation, innovation specific policies are still at an emerging state.

Kenya has made efforts in easing the establishment of business through the e-citizen platform however political stability remains a threat to business growth.

Awards exist but are relatively small scale to spur development of innovation ideas, but the impacts of these incentives are unclear and untracked.



# Domain 4: Incentives



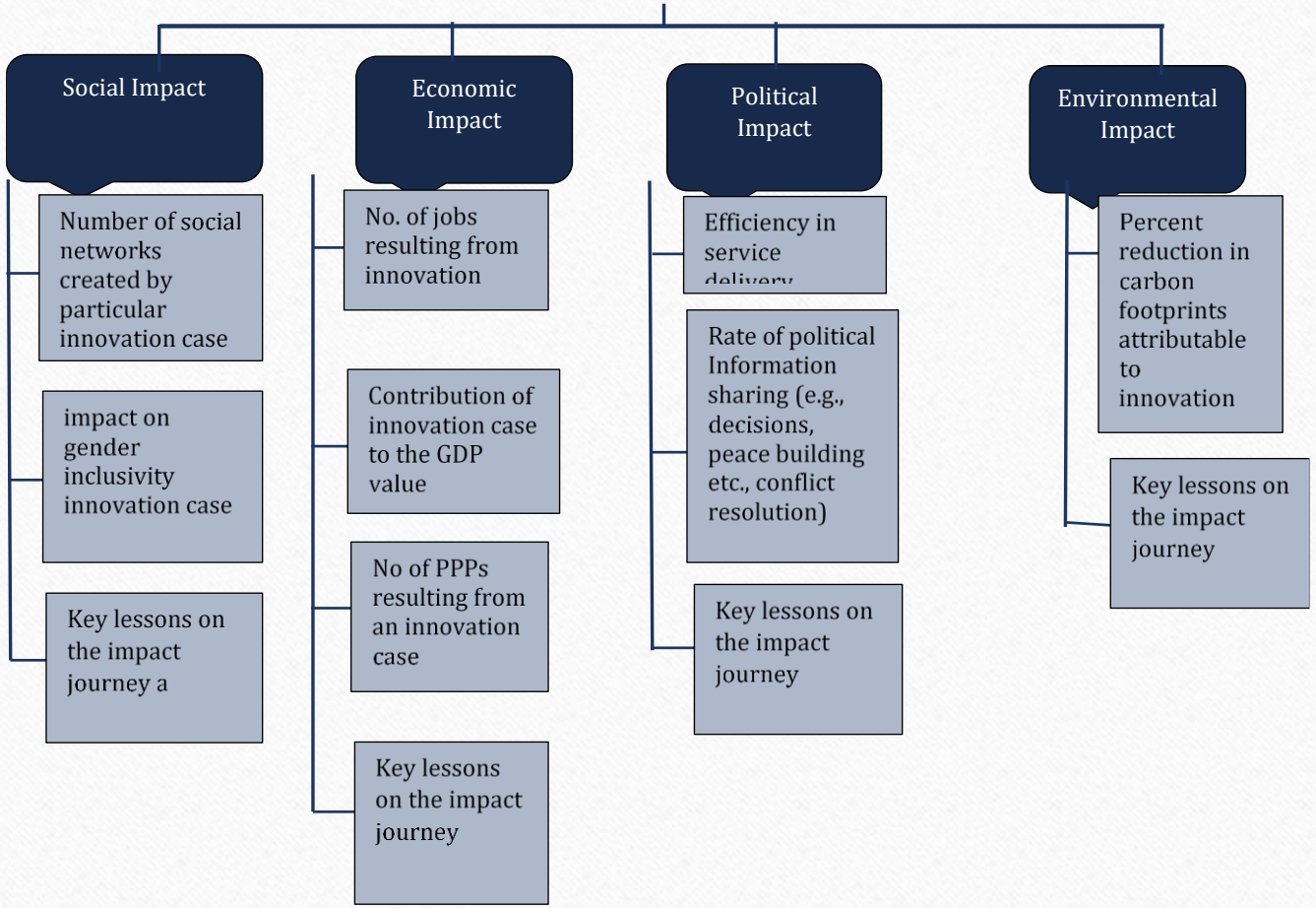

Key insights

Incentives exist but are relatively small scale to spur development of innovation ideas but the impacts of these incentives are unclear and untracked.

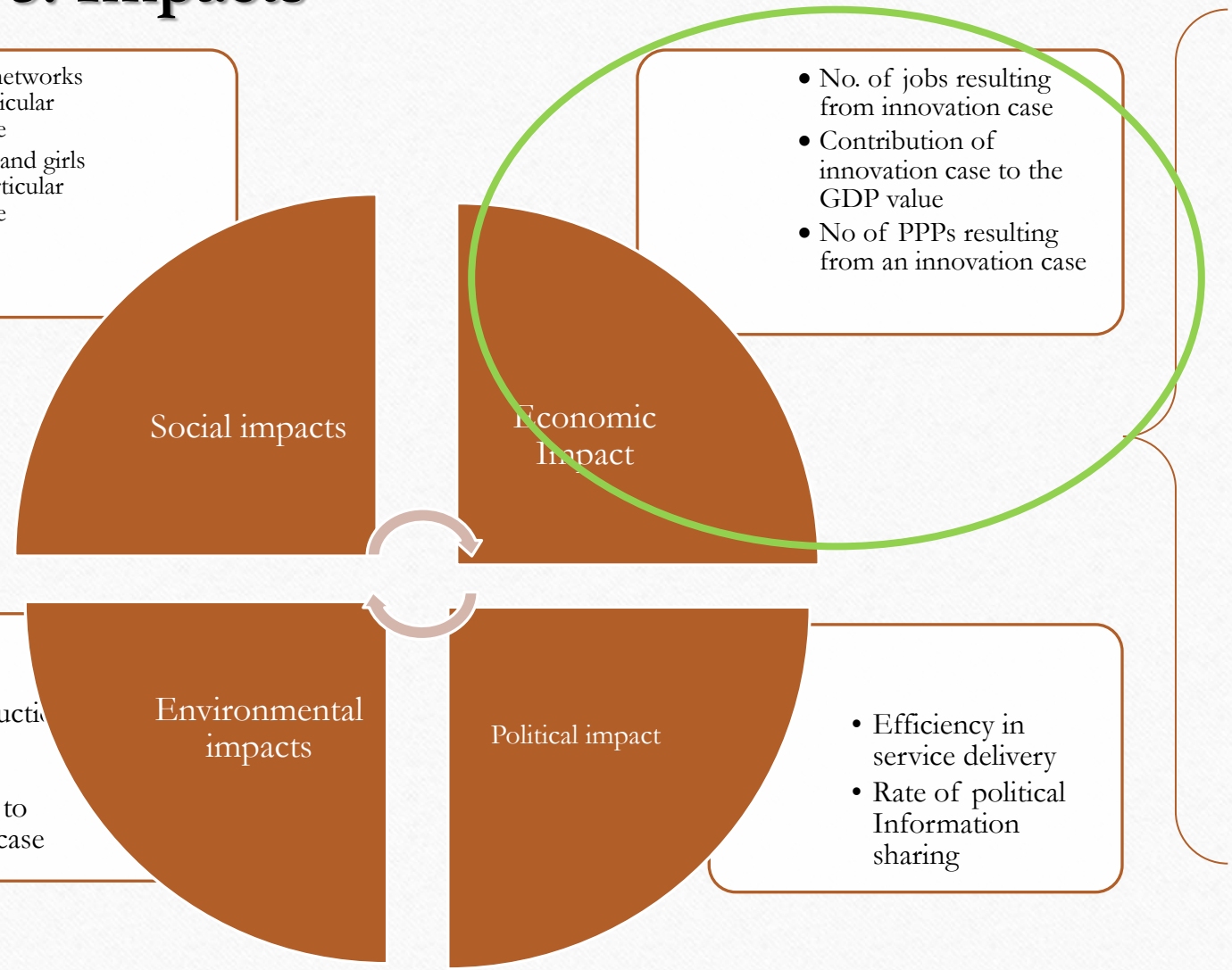
Incentives on business process are prioritised than awards because of perceived wider impact

# Domain 5: Impacts

**Social impacts of innovation are multiple but often overlooked due to the focus on economic impacts**



# Domain 5: Impacts




**Key insights**

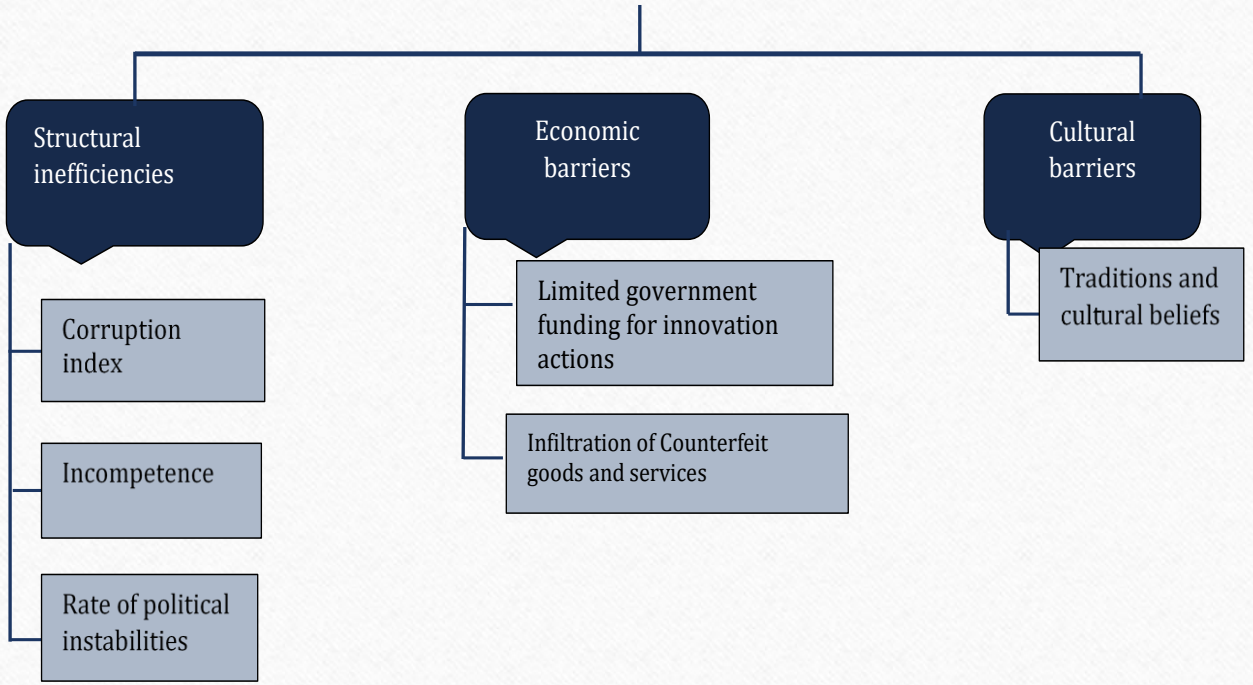
No clear framework to track impacts of particular innovations.

Economic impacts are ranked highly thus a frontier sub-domain.

Ecological impacts such as carbon foot-prints are globally recognised but are yet to be prioritised int eh domestic efforts.

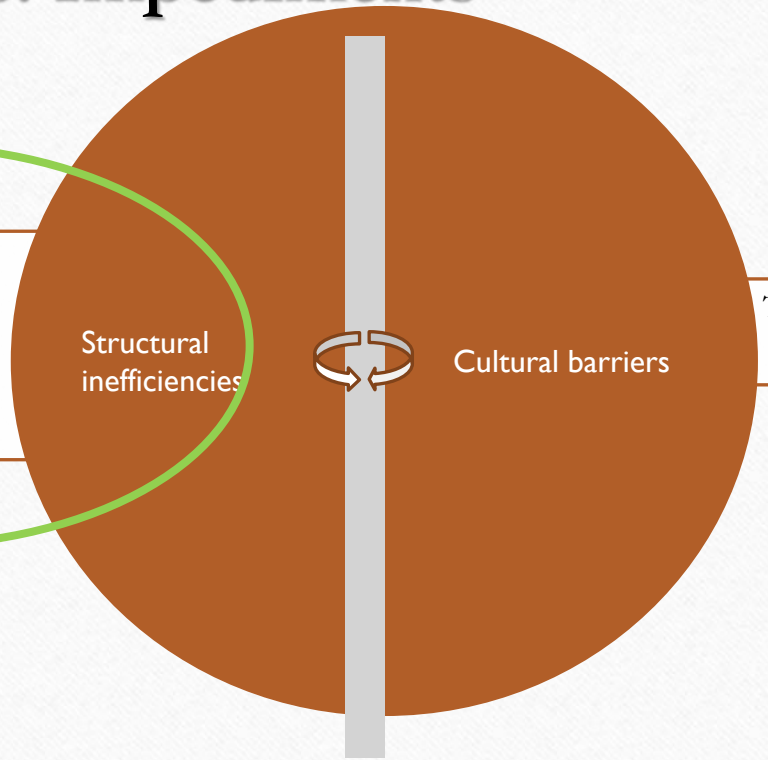
# Domain 6: Impediments to Innovation

Impediments are both internal and external barriers that impede innovation progress.



# Domain 6: Impediments

- Corruption index
- Incompetence
- Rate of political instabilities




Traditions and cultural beliefs

Structural barriers especially incompetence and corruption are ranked highly.

# FRONTIER SUB-DOMAINS

| | |
|---|---|
| **Innovation policy** | There is need to create a consolidated visibility of innovation agenda in the country's development blueprints through a long term National Multi-sectoral Innovation Masterplan. |
| **Commercialisation** | Strengthening commercialisation units e.g., TTOs, incubation centres within academic platforms through capacity, funding etc. presents a huge opportunity to turn huge amounts of research lying on the shelves into market products that could spur economic growth and job creation. |
| **Funding** | There is need to connect the enterprise/start-up funding to university research through establishing University-led enterprises or strengthening University-enterprise linkages that directly draw from the various publications. |
| **Business Process Incentives** | There is need to develop an institutionalized incentive scheme strategy with clear budgetary allocation, coordination and impact tracking system. |
| **Economic impacts** | There is need to align or strengthen the innovation outlook (led by KeNIA) with the national economic outlook (led by KIPPRA) to establish clearer connections. |
| **Structural Inefficiencies** | There is a need for certain systemic reforms, including those that deal with infringers and protects innovations from piracy and counterfeits. |

# The Scoreboard

# Indicators summary

| Total Number of Indicators identified 172 | Number of Indicators Prioritized 77 | Total Number of Domains 6 |
|---|---|---|
| • 172 | • 77 | • 6 |

# THE SCOREBOARD INDICATORS: *DOMAINS AND SUB DOMAINS*

| Domain | Subdomain | No of indicators identified | Prioritised Indicators |
|---|---|---|---|
| **Domain 1: National and Global Economic Context**, which defines innovation context. The recognition of innovation in national and global economic contexts is critical in legitimising and allocating resources to the innovation agenda. | National blueprints | 6 | • Extent of Citation/consideration of innovations in economic blueprints |
| | Innovation governance | 7 | • Presence of a dedicated innovation Agency,<br>• Government entities dedicated to ST&I<br>• Availability of coordination mechanism<br>• No of staff and qualifications in STI Agencies |
| | Innovation policies | 8 | • Presence of innovation relevant policies<br>• Availability of long-term innovation plans<br>• No and type of treaties Kenya has signed<br>• Availability of domestic implementation |

# Domain 2: Innovation life cycle/value chain

| Domain | Subdomain | No of indicators identified | Prioritised Indicators |
|---|---|---|---|
| Domain 2: Innovation life cycle/value chain, which consists of the platforms and activities that directly drive the progression of innovation, from conceptualization through development commercializing, uptake, and impact. | Discovery phase/Knowledge generation | 28 | Academic/Research<br>• No of institutions, source of funding (private or government; focus)<br>• No. of enrolled and graduated students<br>• No. of STEM programmes (by level)<br>• Presence of distinct innovation support office/directorate<br>• No. of publications<br>• No. of patents registered<br>• Publication impact factor<br>• Possession of explicit research/innovation strategy and policies<br>Non-academic platforms (SMEs, CBOs etc)<br>• No of organisations (by type) with dedicated R&D infrastructure<br>• New process/products generated |
| | Development /Commercialisation | 21 | Academic- Universities- TTOs/commercialisation departments<br>• Availability of operational TTOs/Commercialisation units<br>• Funding of commercialisation units<br>• Average No of staff in the TTOs by gender<br>• Share of staff with research/innovation skills/background<br>• No. and nature of research- industry partnerships<br>• Availability of policy<br>• Share of publications with patent applications<br>• Number/share of patents developed into market products<br><br>Non-academic<br>• Number and scale of incubation/accelerator platforms<br>• Access to financial services<br>• Ownership of accelerator platforms (local/international)<br>• Access and affordability of financial services<br>• Share of manufacturing firms that engaged in in-house R&D<br>• No of staff dedicated to R&D by sex |
| | Diffusion and uptake | 9 | • Value of sales; no of; no of units sold from commercialised products ; units<br>• Number and scale of National and sub-national Innovation weeks<br>• Number and scale of annual innovation discussion forum<br>• Number of Skills and training platforms/Initiatives |

# Domain 3: Investments

| Domain | Subdomain | No of indicators identified | Prioritised Indicators |
|---|---|---|---|
| **Domain 3: Investments- Includes financial and infrastructural investments from both state and non-state sources.** | Funding | 13 | • Budgetary allocation for STI from public sources<br>• Funding from non-state sources differentiated by private and non-profit sources<br>• FDI net inflows, % GDP (focusing on the innovation agenda)<br>• Availability and scale of special funds (e.g. youth fund)<br>• Diversity and nature of funding instruments (loans, grants, bonds etc.)<br>• Share of funds with equity mechanisms in distribution |
| | Infrastructure/ICT | 15 | • Availability, nature and scale of digital platforms<br>• Share of population above 18 years with access to internet<br>• Share of population above 18 years connected to internet.<br>• No of internet suppliers against population<br>• Geographic coverage of 3G,4G,5G", cost per 1MB of data compared to other Africa and global averages |

# Domain 4: Incentives

| Domain | Subdomain | No of indicators identified | Prioritised Indicators |
|---|---|---|---|
| **Domain 4_ Incentives: constitute the economic and legal initiatives (incentives) that the government and other players have established specifically to enhance innovations (for example, tax-breaks) by reducing costs and bureaucratic barriers to scaling up and commercialisation. These also include innovation awards aimed at encouraging innovations among others.** | Fiscal Incentives | 5 | • Number of Innovation-oriented fiscal instruments<br>• No and scale of tax incentives targeting innovations |
| | | | • |
| | Policy incentives | 8 | • Availability of special economic zones<br>• Presence of innovation driven policies on value addition, procurement policies |
| | Business process incentives | 7 | • No of days needed to acquire a business licence<br>• Process and duration of processing patent application<br>• Ease of access to credits<br>• Average interest rates<br>• Protection of intellectual Property rights |
| | Awards | 9 | • Availability and nature of innovation awards at (sub)national platforms<br>• Monetary/social/economic value of products.<br>• Impact of awards - new products or businesses due to the awards |

# Domain 5: Impacts

| Domain | Subdomain | No of indicators identified | Prioritised Indicators |
|---|---|---|---|
| **Domain 5: Impacts - constitute the resultant impacts of innovations. Such impacts can be social, economic, political, environmental or cultural occurring across sectors (health, agriculture etc.)** | Social impacts | 6 | • Number of social networks created by particular innovation case<br>• Number of women and girls involved in particular innovation case<br>• Key lessons on the impact journey |
| | Economic Impact | 6 | • No. of jobs resulting from innovation case<br>• Contribution of innovation case to the GDP value<br>• No of PPPs resulting from an innovation case<br>• Key lessons on the impact journey |
| | Political impact | 6 | • Efficiency in service delivery<br>• Rate of political Information sharing (e.g. decisions, peace building etc., conflict resolution)<br>• Key lessons on the impact journey |
| | Environmental impacts | 4 | • Percent reduction in carbon footprints attributable to innovation case<br>• Key lessons on the impact journey |

# Domain 6: Impediments

| Domain | Subdomain | No of indicators identified | Prioritised Indicators |
|---|---|---|---|
| **Domain 6: Impediments- constitute barriers to the value chain including cheap imports that price out local innovations from the market** | Structural inefficiencies | 8 | • Corruption index<br>• Incompetence<br>• Rate of political instabilities |
| | Cultural barriers | 4 | • Traditions and cultural beliefs |
| | Economic Barriers | 2 | • Limited government funding for innovation actions<br>• Infiltration of Counterfeit goods and services |

# DIGITAL SCOREBOARD

A web platform designed to visualize and provide info graphs in real-time that connect to the data collection database, using a RESTful API interface.

The Digital scoreboard platform link:

http://kio-sti.arin-africa.org//

# Conclusion and Next Steps

## Conclusion

The outlook provide a foundational framework upon which Kenya's innovation assessment can be drawn.

Overall, Kenya's innovation outlook is relatively complex and still requires better coordination and consolidation.

It is worth stressing that the scope of this study as well as its empirical basis is limited as the findings are based on national level indicators with limited in-depth sectoral analysis beyond the national scope.

It is therefore work in progress and may benefit from further targeted analysis especially around some of the frontier indicators or domains identified by stakeholders.

The study has nonetheless succeeded in working with stakeholders to develop an inaugural contextual framework and indicators which Kenyan decision makers and stakeholders can relate with and apply in tracking innovation progress.

## Next steps

Collecting and updating different domains with data that is missing. Further work in coming up with methodologies for collecting specific information/data for the different domains and subdomains is necessary to affirm the indicators.

Need for deep dive into particular frontier sub-domains targeting the sector specific and county level analysis. Stakeholders' engagement could further help in developing the various subdomains and piloting this across Counties as a way of documenting County innovation processes and activities.

Future outlooks might focus on specific areas especially the frontier (sub) domains identified in this study to generate detailed understanding of innovation dynamics and investment opportunities.

Linking with the Innovation Bridge initiative. The study has highlighted the need to continuously showcase innovations in the country and data maybe updated periodically through linkage with the Innovation Bridge Initiative.

# PROJECT TEAMS

## Core study team from ARIN

- ✓ Dr Joanes Atela (j.atela@arin-africa.org)
- ✓ Prof Sam Kinyanjui
- ✓ Dr Erick Omwandho
- ✓ Mrs Nora Ndege
- ✓ Mr Tom Randa
- ✓ Ms Leah Aoko
- ✓ Haron Akala
- ✓ Brian Otieno
- ✓ Ms Salome Okoth

# Expert Reviewers

*Strategic Experts reviews and inputs drawn from the Global STI research and scholars gurus who have championed and published STI research in Africa and currently leading some of the global STI debates and institutions*

- Prof Jo Chataway: ,
- Prof Andy Frost:
- Dr Ellie Osir:

# National KIO Working Group

*Kenya National Innovation Outlook 2022 Working Group consists of 14 experts drawn from national and regional STI actors, implementers, researchers and policy technocrats.*

1. Sylvance Okoth – EASTECO
2. Mr. Joshua Nyakundi-KIPI
3. Mr. Lukovi Seke- AUDA – NEPAD
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10. Geoffrey N. Andama-KATTI Representative
11. Dr. Vincent Gaitho- Mount Kenya University
12. Prof. Mwenda Ntarangwi- Commission for University Education
13. Mr. Kigara Kamweru,- Chairman, ProPerArt Trust,
14. Dr. Beatrice Muganda-Director of Research, PASGR

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# Thank You

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