EAST AFRICAN REGIONAL INNOVATION AND TECHNOLOGY TRANSFER STRATEGY

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ACTS	African Centre for Technology Studies
AI	Artificial Intelligence
AfDB	Africa Development Bank
API	Burundi Investment Promotion Agency
AMCET	Al-Maktoum College of Engineering and Technology
ARIPO	Africa Regional Intellectual Property Organization
Bihub	Burundi Innovation Hub
BRELA	Business Registration and Licensing Authority
CBIIC	Chandaria Business Innovation and Incubation Centre
COMESA	Common Market for Eastern and Southern Africa
COSTECH	Commission for Science and Technology
CPC	Community Processing Centres
CMF	Common Manufacturing Facilities
CREATES	African Centre for Research, Agricultural Advancement, Teaching Excellence and Sustainability
CMP	Common Market Protocol
DAEA	Department of Agricultural Economics and Agribusiness
DDI	Data Driven Innovation
DPL	Digital Personalised Learning
DTBi	Dar Teknohama Business Incubator
dLab	Tanzania Data Lab
DRI	Digital Readiness Index
EAC	East African Community
EASTECO	East African Science and Technology Commission
FDA	Rwanda Food and Drugs Authority
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GIG	Global Innovation Gathering
GII	Grid Innovation and Incubation Centre
GNI	Global Innovation Index
HDIF	Human Development Innovation Fund
ICES	Information Centre for the Extractives Sector
ICT	Information Communication & Technology
ICT4D	Information Communication & Technology for Development
IDA	International Development Association
IUCEA	Inter Universities Council for East Africa
IP	Intellectual Property
IPRs	Intellectual Property Rights
IoT	Internet of Things

IDRC	International Development Research Centre
Ihub-SS	Innovation Hub South Sudan
ITS	Intelligent Tutoring Systems
IIED	International Institute for Environment and Development
kLab	knowledge Lab
KeNIA	Kenya National Innovation Agency
KCB	Kenya Copyright Board
KIPI	Kenya Industrial Property Institute
KIRDI	Kenya Industrial Research and Development Institute
KTP	Knowledge Transfer Partnership
MDB	Modern Dairy Burundi
LIWA	Linking Industry with Academia
MoICTIYA	Ministry of Information and Communication Technology, Innovation and Youth Affairs' State Department for Youth
MoSTI	Ministry of Science, Technology and Innovation
MCCs	Milk Collection Centers
MGLSD	Ministry of Gender, Labour and Social Development
MSMEs	Ministry of Micro, small & Medium Enterprises
NCST	National Council of Science and Technology
NFAST	National Fund for Advancement of Science and Technology
NGOs	Non-Governmental Organizations
NM-AIST	Nelson Mandela African Institute of Science and Technology
NIRDA	National Industrial Research and Development Agency of Rwanda
NRF	National Research Fund
NRIF	National Research and Innovation Fund
PPP	Public Private Partnership
R&D	Research and Development
RDI	Research Development and Innovation
RSB	Rwanda Standards Board
RIF	Rwanda Innovation Fund
RIEPA	Rwanda Investment and Export Promotion Agency
RIL	Response Innovation Lab
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
STEI	Science, Technology, Engineering & Innovation
SMEs	Medium-Sized Enterprises
STEM	Science Technology Engineering and Mathematics
STEAM	Science, Technology, Engineering, Art and Mathematics
S&T	Science and Technology
STI	Science Technology and Innovation
STISA	Science Technology and Innovation Strategy for Africa
SUGECO	Sokoine University Graduate Entrepreneurs Cooperative

SSA	Sub-Saharan Africa
SSEM	South Sudan Economic Monitor
TAREBI	Tanzania Renewable Energy Business Incubator
TISCs	Technology Information Support Centres
TCPD	Technology, Participation & Messaging and Teacher Continuous Professional Development
TIRDO	Tanzania Industrial Research and Development Organization
TDC	Technology Development Centre
TIC	Tanzania Investment Center
TVET	Technical Vocational Education and Training
UHT	Ultra-High Temperature
UIRI	Uganda Industrial Research Institute
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UK	United Kingdom
USD	United States Dollar
UWEP	Uganda Women Entrepreneurship Programme
WIPO	World Intellectual Property Organization
ZTBI	Zanzibar Technology Business Incubator

Definitions of Terms

Accelerator: A start-up service working with a start-up or entrepreneur for a fixed period and providing intensive mentorship and development services[1]

Artificial Intelligence: The ability of a digital computer, system or computer-controlled robot to perform tasks commonly associated with intelligent beings.

An intellectual property: Refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce[2].

Common manufacturing facility: This is a concept where an organisation provides a platform for MSMEs to use its facilities to undertake production of their products[3]

Community processing centres: This includes common facilities like testing laboratory, cleaning, grading, sorting and packing facilities, dry warehouses, specialized storage facilities including controlled atmosphere chambers, pressure ventilators, variable humidity stores, pre-cooling chambers, ripening chambers, cold chain infrastructure including reefer vans, packaging unit, irradiation facilities, steam sterilization units, steam generating units, food incubation cum development centers etc. [4]

Ecosystem: a complex network or interconnected system.

Emerging Technologies: Generally refers to new or continuing technologies whose development, practical applications, or both are still largely unrealized.

Framework: A real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful[5].

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

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

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

Innovation Hub: A place that offers innovators with ideal conditions for growth of their young businesses in terms of funding, workspaces, training, etc.

Innovation lab: are business units that employ the methods of agile startups, with the goal of devising novel ideas that can either disrupt or complement the overall company[6].

Innovation support structure: are organizations,formations or systems that provision for innovators or novelties.

Maker-space: a collaborative workspace where people can come together to create, learn empowering

[1]https://fingo.fi/wp-content/uploads/2021/01/innovation-ecosystem-kenya_0.pdf
[2]https://www.wipo.int/about-ip/en/
[3]https://www.facebook.com/kirdi.kenya/posts/what-is-common-manufacturing-facility-cmfthis-is-a-concept-where-kirdi-provides-/1739987032775856/
[4]https://www.mofpi.gov.in/Schemes/mega-food-parks/project-components#:~:text=Central%20Processing%20Centers%20(CPC)%3A,%2Dcooling%20Chambers%2C%20Ripening%20Chambers%2C
[5]https://www.techtarget.com/whatis/definition/framework
[6] https://www.wework.com/ideas/professional-development/management-leadership/innovation-labs

hands-on skills or invent things, either using traditional crafts or technology.

Policy: a law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions.

Start-up: a newly established business that is intended to grow and is less than 10 years of age.

Strategy: A plan or action or roadmap designed to achieve a long-term goal or aim.

Strategic Objective: A broad and clearly defined statements of 'end goals' that an organization aspires to achieve within a defined long-term timeframe.

Technology: is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment.

Technology Transfer (TT): refers to the process of conveying results stemming from scientific and technological research to the market place and to wider society, along with associated skills and procedures, and is as such an intrinsic part of the technological innovation process.

EXECUTIVE SUMMARY

The East African Community (EAC) is a regional inter-governmental organization comprising the Republics of Tanzania, Burundi, Kenya, Rwanda, Uganda, South Sudan, and Democratic Republic of Congo. The main objective of EAC is to develop policies and programs aimed at widening and deepening co-operation among the Partner States in political, economic, social and cultural fields, research and technology, defence, security and legal and judicial affairs, for their mutual benefit.

The treaty that established the East African Community recognizes science and technology as a key driver for sustainable socio-economic development. As a result, the 5th Extra-ordinary Summit of the EAC Heads of State, held in June 2007, established the East African Science and Technology Commission (EASTECO) as an institution of the EAC, mandated to coordinate and promote the development, management and application of science and technology in Partner States to support regional integration and socio-economic development. The formulation of the regional innovation and technology transfer strategy is aimed at contributing to the objectives of EASTECO. The strategy is purposed to catalyse industrial innovation and related outputs, strengthen technology and knowledge transfer, enhance knowledge creation, build effective partnerships, and improve technology management and protection.

The development of this East African Regional Innovation and Technology Transfer Strategy (EARITTS) was stakeholders driven and was undertaken through a six-steps process. This included documenting the status of innovation and technology transfer in the region, mapping of the key stakeholders involved in the East African Innovation Ecosystem, field data collection, preparation of a draft strategy, regional validation of the strategy and preparation of a comprehensive strategy implementation plan.

The situation analysis identified strengths and gaps in the region's innovation and technology transfer ecosystem anchored on eleven (11) objectives, which have informed the EAC regional innovation and technology transfer strategy. The vision, mission, and strategic objectives are as follows:

Vision:

An Innovation Driven Regional Economic Transformation

Mission:

To accelerate the realization of regional economic transformation through strengthening of innovation and technology transfer at sub-national, national, and regional levels.

Strategic Objectives:

The above vision and mission will be realized through the following eleven (11) strategic objectives:

Strategic objectives to be pursued

1. To strengthen the legal and policy framework supporting innovation and technology transfer.
2. To strengthen institutional framework supporting innovation and technology transfer.
3. To enhance access by innovators and start-ups to innovation support structures.
4. To strengthen innovation, technology and knowledge transfer in universities and research organizations.
5. To enhance skills and talents for innovation, technology, and knowledge Transfer.
6. To develop and strengthen innovation and technology management and protection.
7. To enhance access to funding for innovation and technology transfer.
8. To strengthen collaboration, linkages, and partnerships in knowledge creation and transfer.
9. To strengthen provision of information services on innovation and technology transfer.
10. To enhance development and deployment of emerging technologies.
11. To strengthen industrial innovation building and support

Some 48 strategies and 69 actions/activities have been formulated which will be implemented in a period of five years. Some activities will be implemented by EASTECO while most of the activities will be implemented by the member states with EASTECO provided a facilitating role. Approximately US$ 5.55 million will be required to implement this strategy. The resources will be mobilise through EASTECO budget, EAC countries as well as development partners. There are several players such as IDRC, SIDA, FCDO, GIS as well as EU, which currently have special interest in promoting innovation, technology transfer, particularly those activities related to national and institutional policies, capacity building and development of appropriate templates and guidelines on innovation and technology transfer. These partners will be targated to mobilise resources for the implementation of the strategy.

1 INTRODUCTION

1.1 BACKGROUND

The East African Community (EAC) is a regional inter-governmental organization comprising the Republics of Tanzania, Burundi, Kenya, Rwanda, Uganda, South Sudan, and Democratic Republic of Congo. The main objective of EAC is to develop policies and programs aimed at widening and deepening co-operation among the Partner States in political, economic, social and cultural fields, research and technology, defence, security and legal as well as judicial affairs, for their mutual benefit.

The treaty for the establishment of the East African Community recognizes science and technology as a key driver for sustainable socio-economic development. It explicitly provides for the Partner States to promote and support cooperation in the development and application of science and technology within the Community, in Articles 5, 12 and 103. Furthermore, various instruments of EAC and its institutions recognize science and technology as key in the region's quest to attain upper middle-income economy status by 2030. Science and technology is identified as one of the key drivers for sustainable socio-economic development in EAC's industrialization and integration agenda. Further, EAC Vision 2050 identifies science, technology, and innovation, through research and development, as enablers of sustainable socio-economic development in EAC. The Common Market Protocol (CMP) similarly, flags science and technology and prioritizes the enhancement of research and technological advancement to accelerate economic and social development, as one of its objectives.

It is under this background that the 5th Extra-ordinary Summit of the EAC Heads of State, held in June 2007, established the East African Science and Technology Commission (EASTECO) as an institution of the EAC, in response to the provisions of the treaty. The protocol establishing EASTECO defines the overall objective of the Commission as to coordinate and promote the development, management and application of science and technology in Partner States to support regional integration and socio-economic development. The specific objectives of EASTECO include among others i) cooperation in the development of regional science and technology policies; ii) joint mobilization, utilization, management and development of resources, both material and human, for the development of science and technology in the Community; iii) cooperation in the joint research and development in science and technology; iv) promote scientific and technological innovation and invention within the Partner States; v) development, adoption and utilization of information and communication technology, as well as the adoption of new and emerging technologies; and vi) cooperation with organizations with similar objectives. The formulation of the regional innovation and technology transfer strategy is aimed at contributing to the objectives of EASTECO.

1.2 RATIONALE

Science, Technology, and Innovation (STI) are widely recognized as key drivers of development in modern economies. East Africa has been experiencing a positive phase of growth as manifested in substantial economic growth in Partner States in the recent past. For the region to sustain and transform this growth into a knowledge economy, it is imperative to harness, develop, and apply science, technology, and innovation for socio-economic development through the formulation and implementation of appropriate policies and strategies. In addition, business entities in East Africa must enhance generation and conversion of innovative ideas into viable products through technology transfer. However, for this to happen, there is an urgent need for an innovation and technology transfer strategy to tap on the opportunities available and address the gaps in the innovation ecosystem.

In addition, developed world are investing heavily in innovations and emerging technologies especially artificial intelligence (AI) and Internet of Things (IoT), which are the new technological frontiers for socio-economic development. These technologies are underpinned by coherent and integrated frameworks that foster innovation and technology transfer. For these reasons, the EAC region urgently requires an innovation and technology transfer strategy to guide activities and catalyse outputs in this critical area. Statistics indicate that returns on investments in innovations and emerging technologies are enormous. For example, it is projected that AI will see a US$15.7 trillion increase to the global economy by 2030 , and it is therefore imperative for EAC to put in place a strategy to enable it to tap into the global economy driven by AI and IoT.

Further, in this emerging era of global fast-paced and knowledge-based economy, universities, as major centres of learning and research, and research institutions are becoming increasingly important as sources of ideas, knowledge, skills, innovation, and technological advances. These ideas can be turned into new products, processes and systems needed to drive their respective national economies, and thus placing universities and research institutions at the centre of the national innovation ecosystems. Consequently, commercialization of research and innovation outputs from universities and research institutions to industry has become an area of strong policy interest in African countries.

[7]PwC Global Artificial Intelligence Study 2017

This innovations and technology transfer strategy for the EAC region is purposed to catalyse industrial innovation and related outputs, strengthen technology and knowledge transfer, enhance knowledge creation, build effective partnerships, and improve technology management and protection, amongst others.

1.3 THE PROCESS OF DEVELOPING THIS STRATEGY

The development of this East African Regional Innovation and Technology Transfer Strategy (EARITTS) was undertaken through a six-steps process. This included documenting the status of innovation and technology transfer in the region, mapping of the key stakeholders involved in the East African Innovation Ecosystem, field data collection, preparation of a draft strategy, regional validation of the strategy and preparation of a comprehensive strategy implementation plan.

1. **Desk review:** A desk review was undertaken to provide the innovation and technology transfer landscape in the EAC region, highlighting the progress that have been made and the gaps that still need to be filled. A survey tool was used to guide the desk review which covered nine pillars: legal and policy frameworks, innovators and start-ups, innovation support structures, institutional framework, skills and talents, intellectual property management, funding of innovation and technology transfer, collaboration, linkages and partnerships within the innovation ecosystem, access to innovation and technology transfer information and emerging technologies[8].
2. **Stakeholders mapping:** Through the desk review, relevant stakeholders in the region were identified. These included innovators, start-ups, innovation hubs, universities, research organizations, government agencies, innovation funding agencies and development partners[9].
3. **Interviews:** Data was collected through interviews from the following activities:
    a. First, customized data collection tools were administered by national focal points to about 200 stakeholders in Burundi, Rwanda, South Sudan, Tanzania, and Uganda. At least 84 responded, including 28 start-ups, 35 managers of innovation hubs and 21 government institutions[10].
    b. For Kenya, the strategy relied on data collected through two recently completed projects.
    i. The first one is the UNDP funded project on mapping of innovation ecosystem in Kenya. In this project, interviews were conducted with 287 respondents consisting of 123 start-ups, 112 innovation hubs, 28 government agencies and 24 network and marketing agencies[11]. This project was implemented in collaboration with Konza Technopolis Development Authority and the report validated by 250 participants.
    ii. The second activity was based on the European Union - Organisation of African, Caribbean and Pacific States (EU-OACPS)[12] funded project on developing guidelines on (a) management and coordination of innovation hubs in Kenya, and (b) strengthening commercialization of R&D in universities and research organizations. In this project some 78 respondents were interviewed from 24 institutions[13].

[8]List of documents reviewed is given in Annex 1.
[9]List of stakeholders consulted is given in Annex 2
[10]List of stakeholders consulted is given in Annex 3
[11]Some of the stakeholders consulted is given in Annex 4
[12]This project was supported by the Secretariat of the Organization of African Caribbean and Pacific States through funding from European Union. It was implemented by the Kenya National Innovation Agency. The African Centre for Technology Studies provided the technical support.
[13]Some of the institutions consulted is given in Annex 5

4. **Preparation of the draft strategy:** The results of both the desk review and field data collection were used to prepare the draft regional innovation and technology transfer strategy.
5. **Validation of the draft strategy:** The draft strategy will be validated on March 3rd 2023 in Kampala Uganda during a stakeholders meeting planned for February 27th to March 3rd.
6. **Preparation of final strategy:** Based on the inputs from the stakeholders received during the validation, the final strategy will be prepared.

2 SITUATION ANALYSIS

2.1 BRIEF ON ECONOMIC AND INNOVATION PERFORMANCE OF THE EAC COUNTRIES

2.1.1. Long- and medium-term development blueprints

The EAC Vision 2050[14] , is the long-term development blueprint for the region. The Vision, which was developed in 2016, provides broad perspectives in which the region will optimize the utilization of its resources to accelerate productivity and social wellbeing and aspires to realise growth in income per capita to US$ 10,000 by 2050 and moving the region to upper-middle income category. The vision has identified 8 pillars, which include agriculture, food security and nutrition; infrastructure Development; Industrialization; environment and natural resources management; as well as tourism, trade, and other services. Science, technology, and innovation as well as research and development as the two key enablers out of the five identified by Vision 2050.

The Sixth EAC Development Strategy (2021/22-2025/26)[15], which is currently being implemented by the EAC, is consistent with the pursuit of socio-economic transformation agenda of the region as envisioned in East Africa Community Vision 2050. The Strategy aims to transform the East African Community into a stable, competitive, and sustainable lower-middle income region by 2030. It is focused on building a momentum towards post-COVID-19 recovery and accelerating regional adaptation to the dynamic socio-economic environment. The strategy has prioritised agriculture, manufacturing, and extracting industry and services. Agriculture remains the dominant contributor to the economy of most EAC countries. In 2019, it accounted for between 27.4 and 40.65% of the GDP (Table 1). The strategy has identified several challenges facing the EAC agricultural sector, which include low productivity, poor postharvest handling, limited value addition, all of which require innovation and technology interventions. On manufacturing, the strategy proposes that the EAC countries should strive to transform economy from resource-based and low-tech sectors to high tech sectors.

[14] Available at http://repository.eac.int
[15]Available at http://repository.eac.int

Innovation Index Pillar	Tanzania	Uganda	Rwanda	Kenya	Burundi	Sudan
Agriculture	27.4	21.9	24.0	34.1	40.65	28.4
Manufacturing and Extracting Industry	28.6	27.1		16.2	11.76	30.77
Services	36.8	43.3		45.0	43.05	32.34

Table 1: The Contribution of the three sectors to the GDP of the EAC countries

2.1.2. Economic Performance

The EAC is home to an estimated 300 million people, of which over 22% is urban population. The region occupies an area of 4.8 million km2 and a combined Gross Domestic Product of US$ 240 billion[16]. All the six countries have in place long term economic blueprints that guides the economic activities in the countries[17]. Since 2014, the region's GDP grew by an estimated 5.7% and has been the highest among African regions (Figure 2.1). Economic growth was projected to remain strong at 6.1% in 2020 but was significantly reduced following the effect of the Covid-19 global pandemic. Use of Science, Technology, and Innovation to spur post Covid recovery and continued growth in the region is desirable and the innovation and technology transfer strategy will contribute to these efforts.

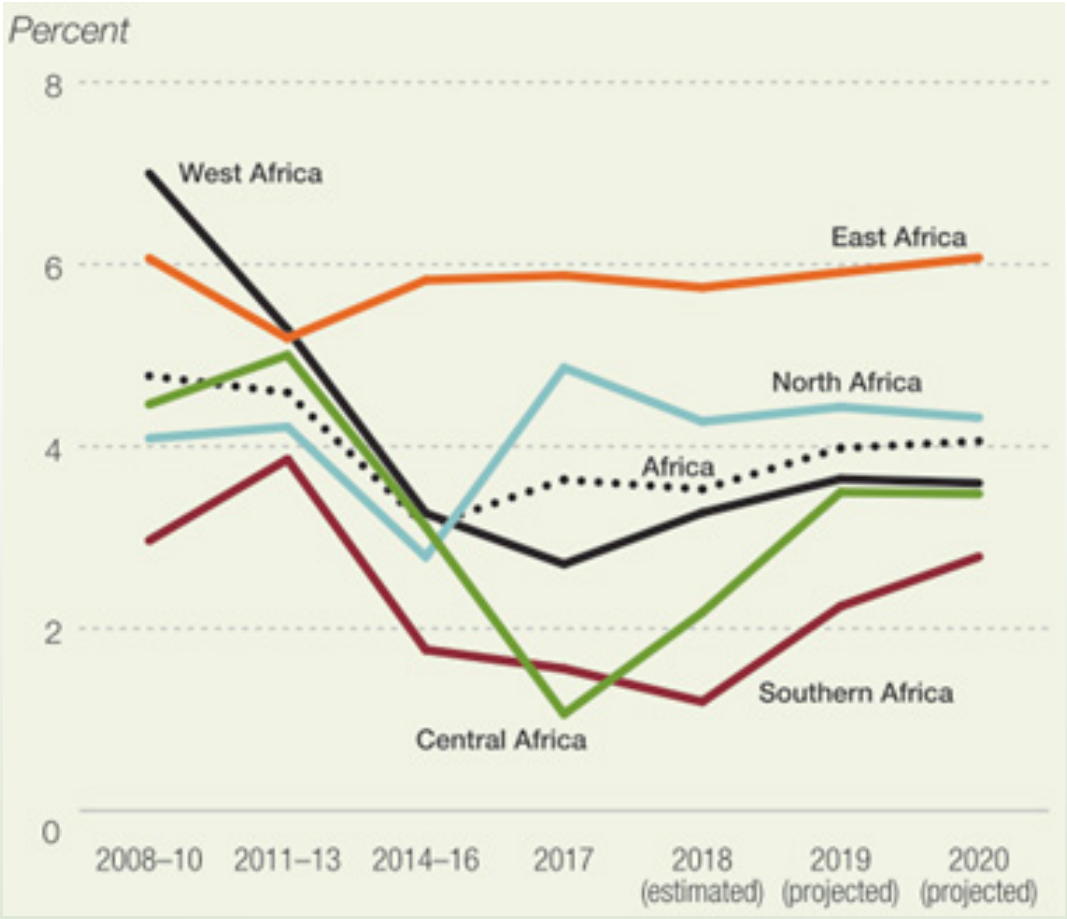


Figure 2 1 GDP growth by African regions (2008-2020) (Source: African Development Bank Statistics)

KENYA

Kenya revised its National Accounts Statistics in 2014 that resulted in incorporating activities that were otherwise omitted in the GDP (rebasing its GDPs[18]). The implication of the rebasing of the GDP (the new GDP in 2013 was 25.3% higher) was that Kenya was pushed above the threshold of USD 1,035 GDP per capita that the World Bank uses to identify least income countries; the new GDP per capita was USD 1,246. As of 2019, IMF statistics ranked Kenya as the third largest Economy in SSA, overtaking Ethiopia and Angola[19]. The African Development Bank Statistics indicate that the Kenyan economy grew by 6.7% in 2021 after 0.3% contraction in 2020[20]. Growth was driven by services on the supply side and by private consumption on the demand side, both benefiting from supportive policies and eased COVID-19 restrictions. Inflation climbed to 6.1% in 2021 from 5.3% in 2020, reflecting increased input costs[21]. Growth was projected to decelerate to 5.9% in 2022 and 5.7% in 2023.

RWANDA

The real GDP growth in Rwanda was estimated to grow by 8.7%, higher than the average growth for sub-Saharan Africa[22]. This earned the country the ranking as the fastest growing economy in Africa; and among the ten fastest growing economies globally. Growth was mainly in services (7.6%) and industry (18.1%), particularly construction (30%). Investment drove growth, led by public investment in basic services and infrastructure. Despite the positive economic progress in Rwanda, skilled labour deficit has partly hampered further and rapid economic growth for only 4% of the labour force work in the manufacturing sector with more than two thirds involved in low productivity agriculture. The energy costs in Rwanda were found to be 22.2% higher than the average for SSA region.

[16]https://www.eac.int
[17]Kenya (Vision 2030), Tanzania (vision 2025), Rwanda (vision 2050), Uganda (Vision 2040)
[18]UNDP (2014). Analysis of likely implications on rebasing the GDP of Kenya.
[19] Jackson, F. Kenya's fast-growing economy: A Success so far, but underlying problems are coming to the surface. Future directions International (2020). www.futuredirections.org.au/publication/kenyas-fast-growing-economy
[20]https://www.afdb.org
[21]https://www.afdb.org
[22]African Development Bank. Rwanda Economic Outlook. (2020). https://www.afdb.org/en/countries/east-africa/rwanda/rwanda-economic-outlook.

TANZANIA

According to the World Bank (2022), the economic activity in Tanzania is gradually recovering in the third quarter of 2021, with the surge mainly driven by the hospitality, mining, and electricity sectors. The World Bank estimates a real GDP growth rate of 4.3 percent in 2021. Growth is expected to strengthen over the next two years, assuming pandemic conditions ease and the external environment improves. The real GDP growth rate is projected to reach 4.5–5.5 percent in 2022 and average about 6 percent over the medium term as exports and domestic demand recover. The increasing economic gain in this country is attributed mainly to its political stability over the years. In terms of employment, the agricultural sector accounts for the largest proportion of the job opportunities availed to the population. However, this serves to the demerit of industry as it accounts for minimal employment rates.

UGANDA

Due to the expansion in the services sector, Uganda reported a GDP growth of 6.3% up from 6.2% in 2018[20]. The growth in the industrial sector (6.2%) came second to the services sector (7.6%); whereas the agricultural sector was among those that showed the least growth at 3.8% in the GDP despite being the sector that accounts for the largest proportion (71%) of the national employment. The economic recovery is expected to continue, with GDP projected at 4.6% and 6.2% in 2022 and 2023, driven by services, following the reopening of schools in 2022 and recovery in the hospitality sector[23]. As global value chains stabilize and consumer demand rises, manufacturing growth is projected to accelerate.

BURUNDI

After a contraction of 1% in 2020, the economy bounced back in 2021 with GDP growth of 2.2%, driven by agriculture and investment in public infrastructure. Burundi's economic outlook is favorable, with projected GDP growth rates of 3.6% in 2022 and 4.6% in 2023 owing to continuing recovery of agriculture and public investment. Global inflationary pressure intensified by the Russia–Ukraine conflict is expected to increase the inflation rate to 9.3% in 2022[24].

SOUTH SUDAN

Driven by improving macroeconomic conditions and relative peace that have supported a rebound of growth in services and trade, South Sudan's economy is projected to grow by 1.2% in 2022 after contracting by an estimated 5.4% in 2021, according to the World Bank's latest South Sudan Economic Monitor (SSEM)[25]. The report finds that unrelenting floods in 2021 affected both oil production and agricultural sector performance and constrained the country's ability to achieve higher growth. It is projected that South Sudan's economy could grow by 3.5-5.0% over the medium-term if the peace process holds, the economic management reform program succeeds, and global and regional economic recovery does not falter. The economy would also have to navigate additional challenges arising out of the COVID-19 pandemic and climatic shocks.

2.1.3. Innovation Performance

In Sub-Saharan Africa, the EAC countries are performing relatively well in most innovation indices (e.g. global start-ups index 2022; global innovation index report 2022; and UNCTAD's 2021 on technology and innovation report. However, globally, all the six countries are lagging. This is briefly presented here below:

1. The Global start-ups Index 2022 reviewed 1000 cities across the globe. The review showed that the EAC cities performed very well regionally. The city of Nairobi was in position 4 after Lagos, Cape Town and Johannesburg, with Kigali in position 6, Kampala 7 and Dar es Salaam in position 10. However, globally they performed poorly. Kenya ranked in position 163, followed by Kigali (position 395), Kampala (position 462), and Dar es Salaam (583). The areas of challenges included access to funding, innovation support structures and infrastructure.
2. The Global Innovation Index Report (2022) captured the innovation ecosystem performance of 132 economies globally. Apart from Kenya (at position 88), none of the EAC countries managed to be amongst the top 100 most innovative countries. In fact, compared to 2021 global innovation index, all the EAC countries, apart from Uganda, performed worse in 2022. Key areas of concern (where most EAC countries performed worse than their global rankings) are human capital and research, infrastructure, and market sophistication dimensions (Table 2.1).
3. UNCTAD Technology and Innovation Report (2023) analysed readiness of 158 countries for frontier technologies using five building blocks (Table 2.2.) to measure the capacity of the countries to use, adopt and adapt frontier technologies. None of the EAC countries emerged within the top 100.

Table 2 1: Global Innovation index (2022)(source: WIPO International [26])

Innovation Index Pillar	Tanzania	Uganda	Rwanda	Kenya	Burundi
Global Ranking (2022)	103	119	105	88	130
Institutions	74	62	33	82	106
Human capital and research	126	129	106	119	95
Infrastructure	104	109	95	107	130
Market sophistication	79	127	115	111	130
Business sophistication	112	126	113	80	119
Knowledge and technology outputs	114	106	111	74	128
Creative outputs	94	123	126	79	128
Global Ranking (2021)	90	119	102	85	N/A

[23]http://www.afdb.org
[24]http://www.afdb.org
[25]http://www.afdb.org

Table 2 2: UNCTADs Technology and Innovation Report (2023) source: UNCTAD[27]

Country	Total Score	Ranking Rank	ICT	Skills	R&D	Industry	Finance
Kenya	0.32	117	120	135	83	93	107
Tanzania	0.27	127	131	164	79	65	150
Uganda	0.22	138	133	137	91	120	147
Rwanda	0.22	139	134	142	99	137	126
Burundi	0.12	158	161	148	149	152	129

In summary, whereas the region is performing relatively well in SSA, it is lagging globally. Therefore, there is need for continued strengthening of the region's innovation ecosystem, for the region to derive more benefits from its investment in STI.

2.2. POLICIES FRAMEWORK FOR INNOVATIONS AND TECHNOLOGY TRANSFER

Policies that are relevant to innovation and technology transfer include those on STI, intellectual property rights, innovation, incubation, start-ups, commercialization, technology transfer and entrepreneurship.

2.2.1. Efforts of EASTECO on promoting innovation and Technology Transfer

At the regional level, EASTECO has made significant contribution to enhancing innovation and technology transfer in the region. These include development the EAC STI policy (2018) and EAC Intellectual Property (IP) Policy (2018) and the Innovation-led bio-economy strategy. EASTECO has also established EAJSTI (East African Journal of Science, Technology and Innovation); EA Cooperative Grants, and EAC STI Forum.

The STI Policy aims to create an enabling environment for increased investment in Science, Technology and Innovation, as well as their application to support sustainable regional development and socioeconomic transformation. The EAC Regional STI Draft Policy was validated on 24th September 2018, Nairobi Kenya. The purpose of EAC Regional Policy for Intellectual Property, is to encourage technical innovation, and to promote the industrial and commercial use of technical inventions and innovations so as to contribute to the social, economic, industrial and technological development of the Community. A consultant was therefore hired in FY 2017-18 to develop the above-mentioned policy, through a consultative process. It was validated during a regional meeting that was held on 25th September 2018.

[26]https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-en-main-report-global-innovation-index-2022-15th-edition.pdf
[27]https://unctad.org/system/files/official-document/tir2023_en.pdf

2.2.2. EFFORTS OF PARTNER STATES LEVELS

At the Partner State levels, there has been significant progress in putting in place policies and legislation framework to support innovation and technology transfer, as briefly described below.

1. **Burundi:** The country current has in place a national policy for scientific research and technological development (2011), and an implementation plan (2014-2018). There are also laws on industrial property (2009) and copyright (2005). However, the country does not have a policy or a strategy on innovation, technology transfer, commercialization of R&D outputs as well as intellectual property rights.
2. **Kenya:** The Science, Technology and Innovation Act 2013 is the main policy document governing STI in Kenya. In addition, since 2020, Kenya has a draft STI policy which is awaiting adoption by the government. There is also the start-up bill that the stakeholders developed and presented to parliament in 2021 as well as the draft digital economy strategy (2021). The country has also initiated plans to develop a national strategy on technology transfer and commercialization of R&D outputs. However, Kenya does not have a standard innovation policy or strategy and a national IP policy and strategy. Furthermore, most of these policies are in draft form and therefore not yet implementable.
3. **Rwanda:** Rwanda has in place the most recent Science Technology and Innovation Policy, which was enacted in 2020. In addition, it has a national intellectual property policy 2018. A major achievement of Rwanda is the recent launch of a national entrepreneurship development policy (2020), which has addressed several issues affecting SMEs, start-ups, and innovators. Furthermore, there is a start-up bill pending in parliament. However, the country is yet to develop stand-alone policy on innovation, technology transfer and commercialization.
4. **South Sudan:** NESCO supported Ministry of Higher Education Science and Technology (MoHEST) to undertake technical review and development of the draft South Sudan Science, Technology, and Innovation (STI) Policy. Following the completion of review and consultations with relevant stakeholders, a Draft South Sudan National Policy on STI 2022-2032 has been validated by key stakeholders, who provided appropriate recommendations and endorsed the draft policy. However, South Sudan does not have stand-alone policy on technology transfer and commercialization of R&D outputs.
5. **Tanzania:** Tanzania has the oldest STI policy in the region, which was adopted in 1996, and is currently being reviewed. The country has also in place a draft intellectual property policy and strategy (2022) which is awaiting approval by the government. The country also has a draft innovation policy which is currently undergoing stakeholders' consultations. However, currently Tanzania does not have stand-alone policy on technology transfer and commercialization of R&D outputs.
6. **Uganda:** Uganda's STI policy was enacted in 2009, which is implementable through 5 years implementation cycles. It therefore had in place the national STI implementation plan (2013-2018). It also has in place an intellectual property policy (2019). However, Uganda does not have stand-alone policies on innovation, technology transfer and commercialization of R&D outputs.

2.3. INSTITUTIONAL FRAMEWORK FOR INNOVATION AND TECHNOLOGY TRANSFER

The institutional framework for innovation and technology transfer in the EAC region consist of agencies responsible for STI, IP rights, start-ups and innovation hubs as well as commercialization of innovations.

At the regional level, there is the East African Science and Technology Commission (EASTECO) which is mandated to coordinate all matters related to STI in the region. Similarly, at the national level, there are institutions responsible for STI such as National Council and Commissions for Science and Technology in Uganda and Rwanda; Commission for Science and Technology of Tanzania; the National Commission for Science, Technology, and Innovation in Kenya; as well as National Commission of Science and Technology Institute Burundi. There are also institutions responsible for intellectual property, such as the Kenya Intellectual Property Institute (KIPI), the Uganda Registration and Services Bureau- (URSB), the Business Registration and Licencing Agency (BRELA) of Tanzania, as well as the Registrars General's Office under the Rwanda Development Board. However, these institutions are faced with the following challenges:

a. Whereas these institutions are legally established as semi-autonomous agencies and they are working to promote STI in general, they have inadequate capacity and funding to effectively deliver on their mandates, let alone promote innovation, technology transfer and commercialization of R&D outputs.

b. The existing IP institutions have limited mandates and capacity to facilitate technology transfer and commercialization of IP assets, even for those innovations and technologies that they have protected.

c. Currently, only Kenya has a stand-alone institution responsible for innovation and technology transfer – the Kenya National Innovation Agency (KeNIA). The establishment of a stand-alone institution in Kenya is a move in the right direction, which other EAC countries may wish to consider. Other African countries moving in this direction are shown in the text box on the right.

1. Technology Innovation Agency of South Africa,
2. Ghana Innovation and Research Centre,
3. Zambia National Technology Business Centre,
4. Botswana Innovation Hub, and
5. National Office for Technology Acquisition and Promotion of Nigeria

2.4. INNOVATORS AND START-UPS ECOSYSTEM

The EAC region is performing very well in SSA regarding the number of start-ups. Kenya, Rwanda, Uganda, and Tanzania are amongst the top 10 countries in Africa in terms of the number of start-ups. Currently Nigeria is leading with 3300 start-ups, followed by South Africa (660), and Kenya (600), as the top three. The EAC four top countries have a total of 1196 start-ups, with Rwanda, Uganda and Tanzania having 270, 167 and 159 start-ups respectively.

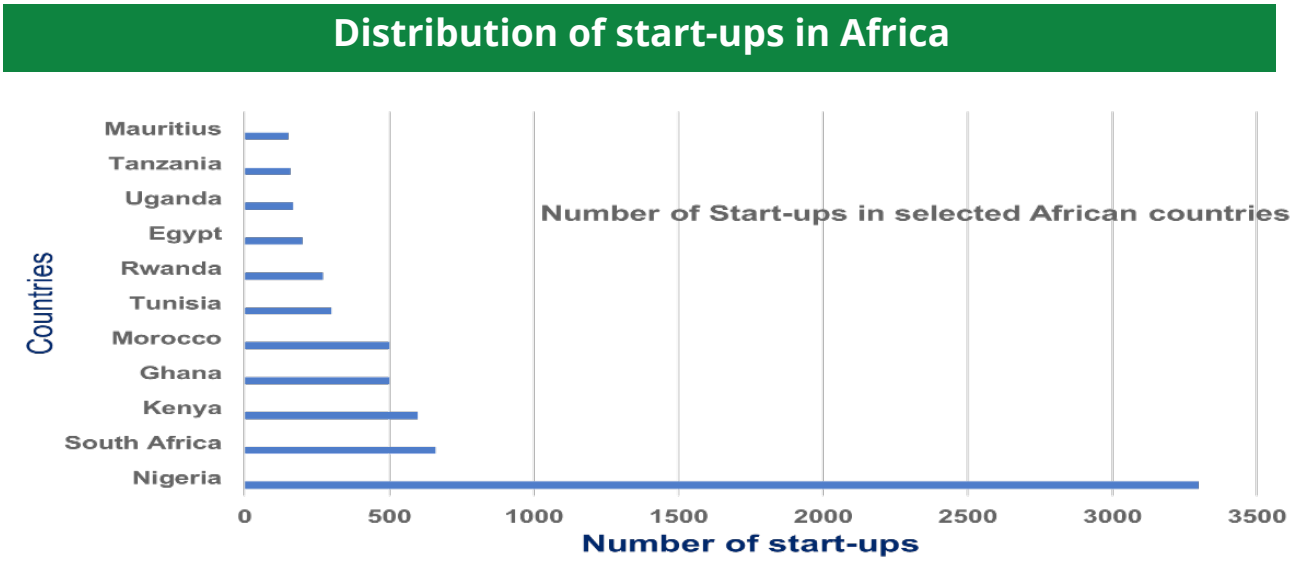


Figure 2 2: African Distribution of start-ups

The start-ups in EAC are driven by young and educated entrepreneurs, a positive trend in the context of youth unemployment in the region. Furthermore, unlike traditional MSEs which are largely informal enterprises, most of the start-ups are formally incorporated. A key positive finding is that most of innovations of the start-ups are linked to prioritised sectors of the economy in the region such as agriculture, health, energy, education and water and sanitation. However, the start-ups face several challenges:

1. **Inadequate skills:** Most of the start-ups have limited adequate skills to effectively manage their businesses. The top-most-rated skills required by the employees of the start-ups are marketing, legal and intellectual property, business development, and database management.
2. **Intellectual Property Rights:** Protection of innovations through intellectual property rights remains a challenge for most start-ups. The main reasons cited for this are: lack of proper information on intellectual property, lengthy and time-consuming patent application process, high cost of patents applications and maintenance, and infringement due to weak enforcement.
3. **Standards and Certification:** Certification of innovators product is a challenge, mainly due to high costs associated with certification services.

4. **Funding of innovation development and commercialization:** Access to funding remains one of the top challenges of start-ups. Most early-stage start-ups rely on grant funding while very few innovators and start-ups have accessed equity funding and yet it is the most sustainable funding mechanism for innovation ecosystem.

5. **Access to support services:** Access to innovation support services is limited due to the available and in some cases affordability.

2.5. INNOVATION SUPPORT STRUCTURES FOR START-UPS

To support the start-ups, all the six EAC countries (like other regions in SSA) have many innovation hubs (hubs, incubation services, accelerators, maker-spaces and co-working spaces). There are an estimated 643 documented hubs that are active in the African continent. Out of these, 39% provide a co-working environment where innovation and technological development can take place while 14% are accelerators, 24% are innovation hubs and 41% are classified are incubators. On this count, Kenya is leading the pack with over 50 hubs, followed by Tanzania (ranging from 20-50), while Uganda, Rwanda and Burundi are in the category of countries with 10-20 hubs. However, the actual number of innovation hubs is significantly higher than these figures, with Kenya reported to have around 200 hubs. The hubs are government and NGO funded with a few being private sector driven. EAC governments are recognising the important role played by the innovation hubs to support enterprise development and the growth of the innovation ecosystem in these countries. Figre 2.3 shows examples of innovation hubs in the six EAC countries.

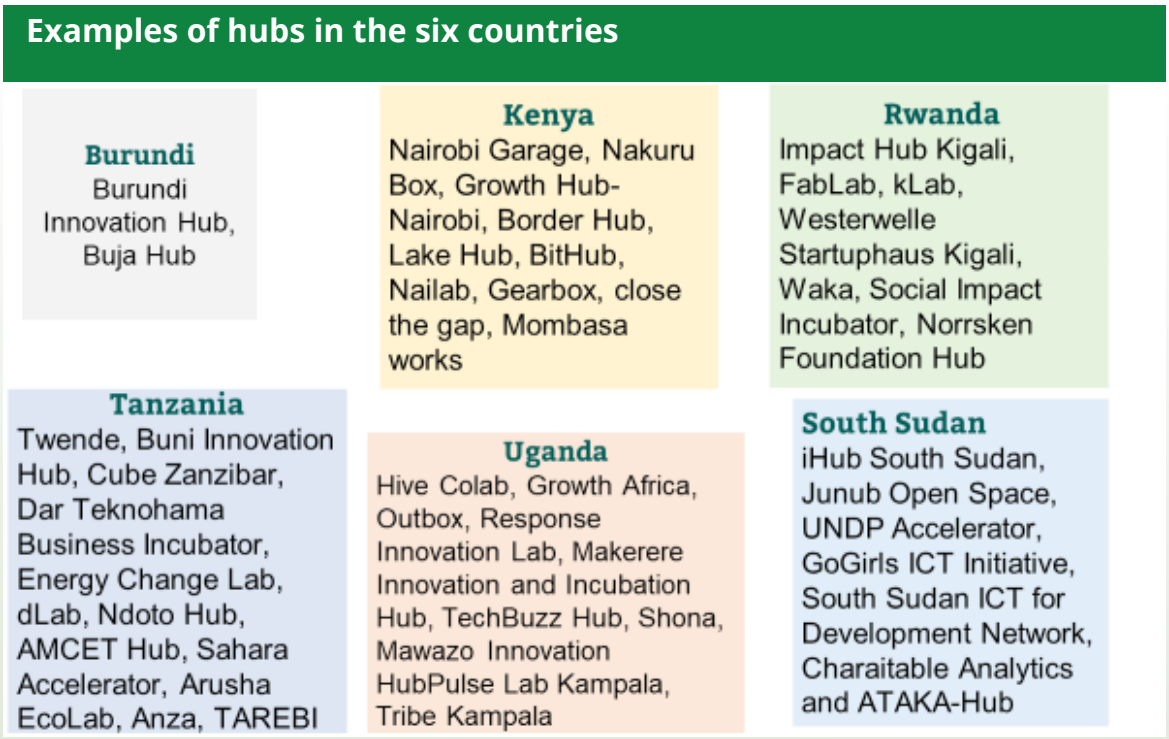


Figure 2 3: Examples of hubs in the six countries

Despite the rapidly increasing number of innovation hubs in the region, they are faced with several challenges. These include:

a. **Inadequate skills:** Due to inadequate skills and capacities, the hubs are not able to provide all the services required by the innovators and start-ups.

b. **Gender:** Gender equality and inclusivity is of a major concern. Most of the managers of the hubs are men.

c. **Disparity:** The hubs are predominantly found in major urban areas with good infrastructure. Access to hubs by innovators in the rural areas is a challenge.

d. **Inadequate Policies:** While the growth of the hubs has been rapid, development of appropriate policy frameworks is lagging in all the countries. There are no guidelines on how hubs should be established, no formal requirements for registration of hubs, and no clarity on definition and distinction between innovation hubs, accelerators, incubation facilities and makers spaces.

e. **Weak differentiation of Services:** The main services provided by the hubs are skills development, marketing and networking, mentorship, marker-spaces and small-scale manufacturing, prototyping and ideation, research, and market analysis. However, there is no clear distinction in terms of services offered by accelerators, incubators, co-working spaces, and maker spaces. For urban areas - endowed by large number of hubs - there is merit for specialization of services by hubs to enhance the quality of services provided to the innovators. However, for rural areas - not well endowed with hubs - consolidation, and creation of a one-stop-shop for the innovators could make more sense.

f. **Public or Private led:** The innovation hubs segment is dominated by public entities and the NGOs, which demonstrates government increasing support to the innovation ecosystem. However, more involvement of the private sector is important for long term sustainability.

g. **Limited level of operation:** Majority of the hubs operate at a micro-scale level in terms of capacity, compared to the possible number of start-ups that may require such services. Scaling up the operations of these hubs will be necessary to enhance outreach.

h. **Collaboration with other agencies:** There is some collaboration of the hubs with other government agencies and that such collaborations bring benefits to the hubs. However, the level of collaboration is inadequate. Networking events and opportunities are not regular while collaboration with research institutions and universities are almost non-existent. Furthermore, there is little evidence of collaboration not only between the hubs themselves but also with other business entities.

i. **Lack of evidence on impact of innovation hubs:** Traditionally, policy makers require evidence for policy and decision making. Therefore, documenting, showcasing, and sharing success stories on the role of the innovation hubs and their contributions to the economic growth of the country is desirable. This, together with awareness creation, are important strategies that can help unlock more resources to the sector.

2.6. SUPPORT STRUCTURES FOR TECHNOLOGY AND KNOWLEDGE TRANSFER IN UNIVERSITIES AND RESEARCH ORGANIZATIONS

2.6.2. Research organizations

Most of the research organizations in the EAC region have in place structures to support innovation, technology transfer and commercialization of R&D outputs. For example, Kenya Industrial Research and Development Institute (KIRDI), Tanzania Industrial Research and Development Organization (TIRDO), Uganda Industrial Research Institute- (UIRI), the National Industrial Research and Development Agency of Rwanda (NIRDA), the Kenya Agriculture and Livestock Organization (KALRO) and the Uganda's National Agricultural Research Organization (NARO) all have in place infrastructure that support innovation and technology transfer. These include incubation services, common manufacturing facility, pilot plants, prototype development units and product development laboratories. These facilities are available to support researchers within these organizations as well as innovators, start-ups, and SMEs from outside the organizations to access innovation and technology transfer services. They also support commercialisation of innovations generated internally by these institutions.

2.6.3. Universities

Similarly, universities in the region are starting to embrace technology transfer and commercialization of R&D outputs. All the first-generation universities (University of Nairobi, University of Dar es Salaam, Makerere University) as well as new universities such as University of Rwanda, Sokoine University of Agriculture and Technology, Jomo Kenyatta University of Science and Technology and Kyambogo University, all have in place technology transfer offices (TTOs) or equivalent structures to support technology transfer and commercialization of R&D outputs. The majority also have in place institutional IP policies that address issue of generation, protection and commercialization of innovation and intellectual property assets.

Despite this progress, the capacity of these institutions to offer technology and knowledge transfer services to a scale that can have impact to the economy is limited. These institutions have the following challenges as discovered in the mapping of innovation ecosystem exercise by UNDP and the EU-OACPS[28] report:

a. Lack the requisite skills for technology transfer and commercialization of innovation products.

b. Inadequate funding to support more innovators and start-ups.

c. Low prioritization of technology transfer and commercialization by senior management officials of these organizations.

d. Lack of frameworks to establish spinoffs and lack of policies to support linkages between these institutions and industry.

e. Only few universities have in place innovation and commercialization strategies.

f. Where Technology Transfer Offices (TTOs) exist, they are generally ineffective mainly because they are underfunded and understaffed, sometimes misplaced within the university's structure, and there is lack of clarity in terms of mandate and functions. In addition, the TTO officers lack the required skills for technology transfer such as patent drafting, IP licensing, IP audit and IP valuation.

[28]This project was supported by the Secretariat of the Organization of African Caribbean and Pacific States through funding from European Union. It was implemented by the Kenya National Innovation Agency. The African Centre for Technology Studies provided the technical support.

g. Lack of a national agency responsible for commercialization means that there is no coordination of commercialisation activities at national level, no documentation of innovation and commercialization success stories, and therefore no evidence to enable policy makers to appreciate the need for investment in technology transfer and commercialization in universities.

2.6.4. Success stories

CASE STUDY 1: LICENSING OF BIOFIX BETWEEN UNIVERSITY OF NAIROBI AND MEA LIMITED[29]

Licensing background

This is an IP licensing agreement between the University of Nairobi and MEA Limited that was brokered through the African Knowledge Transfer Partnership (AKTP), in 2008. MEA Limited (MEA), is a private company established in 1977 to supply quality farm inputs to farmers for the purpose of improving crop production. At the time of licensing (2008) MEA Limited was one of the leading fertilizer companies in Kenya with a market share of about 40 %. In 2006 the company made a strategic decision to diversify to a new product line that would provide an organic and environmentally friendly alternative to the Nitrogen-containing chemical fertilizer that the company had been producing and offering to the market. The decision was in line with the growing global demand for the organically grown food. Hence the interest MEA Limited had on the biofix product. The licensing involved MEA obtaining an IP package consisting of the following: Rhizobium inoculants material as specified and provided by UoN, documented rhizobium biofertilizer efficacy data and production know-how and Biofix trademarks.

Progress made ten years later.

An IP Audit undertaken by the university in 2018 included a review of this licensing agreement, as a case study. The partnership is considered one of the most successful licensing agreements between a university and a local company in the region. Some of success factors are described here below:

a. **From Laboratory to the market:** The product was developed in 1976 and for over 20 years was produced just in small quantities (around 2000 kg) per year and sold during the agricultural show. The partnership with MEA enabled the product to be brought to the market to benefit more farmers.

b. **Increased production:** After licensing, the company built a large-scale sterilization plant, which increased production of the biofix inoculants to 21000 kg per year.

c. **Marketing:** The biofix has increased the yield of soya beans by 50 %, and outside Kenya, biofix product is already being used in Malawi, Zambia, Rwanda, Uganda, Nigeria and

[29]IP Audit Report is available from Intellectual Property Protection and Management Office https://ipmo.uonbi.ac.ke/index.php/node

Ghana. Due to its high performance and effectiveness, international organizations, including the Clinton Foundation, USAID, One-acre-fund as well as programs such as Nitrogen for Africa (N2Africa).

d. **Strengthening the partnership with UoN:** Collaboration of UoN with MEA has continued. For example, a new and attractive packaging material was jointly developed, and through collaborative efforts contamination of the inoculants has been reduced to zero. The partnership also envisaged MEA Limited providing attachment opportunities for UoN students in biofix production and marketing to gain practical and hand-on experience. To date 200 students have had their attachments in MEA.

e. **Impact on the Economy:** Some 225,000 household farmers are using this product in the eight countries.

CASE STUDY 2: CREATNG NEW PRODUCTS THROUGH PPP IN UGANDA[30]

This case study looks at three projects funded under the public-private partnerships grant scheme implemented by the Science Granting Council Initiative and implemented between 2018 – December 2019.

a. **High fibre bakery and confectionery products from maize germ and bran:** This project focused on the utilization of maize bran and germ generated by the different millers in product development for bakery and confectionery enterprises. The project aimed to incorporate bran and germ into various baked and confectionery products such as muffins, bread and cookies. It was spearheaded by Makerere University's department of Food Technology and Nutrition in partnership with private partners and Maganjo Grain Millers. The partnership led to new product lines (at Maganjo) and access to research infrastructure by the University. Furthermore, the partnership led to an innovation, use of Triple bags to reduce deterioration of quality of bran and germ during storage.

b. **Commercial Exploitation of Propolis and Bee Venom in Uganda:** This project aimed at developing propolis and bee venom-based products including: propolis powder supplement, bee venom powder supplement, a syrup drink and a ready – to – drink beverage. It was a partnership between the College of Veterinary Medicine, Animal Resources & Biosecurity (COVAB)-Makerere University, and the Uganda National Apiculture Development Organization (TUNADO) which has a network of 9,000 beekeepers and Aryodi bee farm with a network of 500 producers. Through this partnership, we have built a strong network between the university, the beekeepers and the private company.

[30]These case studies have been documented by a report – strengthening research-industry collaborations in Africa prepared by by Mourice Bolo of Scinnovent Centre and available at https://assets.publishing.service.gov.uk/media/5f8eb8b5e90e0727ce27a2e5/Industry_Collbration_in_Africa.pdf

c. **Cocoa waste to wealth using yeast strains from Ugandan box fermentation:** This project aimed to develop a single cocoa fermentation box to help small scale farmers who cannot generate large quantities of cocoa beans required in storey box fermentation. This project was led by the National Coffee Research Institute (NACORI) in collaboration with the private actors in the cocoa industry namely ICAM Chocolate and Lwanga enterprises. Technology demonstrations on fermentation have been carried out at farm level and prototypes issued to two farmer groups in Bundibugyo and Kasawo. Through this project, more funding has been attracted from EU-funded Market Access Upgrade Programme (MARKUP25) and UNCST and the project targets to extend the fermentation technologies to farmers through trainings for improved quality of cocoa.

2.7. FUNDING FOR INNOVATION AND TECHNOLOGY TRANSFER

The review of funding for innovation and technology focused on six areas: existing national funding mechanisms that support innovation and technology transfer; access to funding by start-ups and innovation hubs; access to funding for commercialization of innovations by universities and research organizations; existing government funding programs that target youth and women, which could be extended to start-ups; promoting local and diaspora investments on innovation; and promoting credit guarantee schemes to support start-ups.

2.7.2. Existing innovation funding mechanisms in EAC countries

All the EAC countries have established some form of funding to support science, technology, and innovation.

a. The Government of Burundi provides, through Burundi Development Bank, incentives to eligible companies which guarantee the transfer of technology to Burundians. There is also the Agence Burundaise pour l'Emploi des Jeunes (ABEJ) Promotion, through which a fund has been set up to support young people to credit for business including commercialization of innovations.

a. Kenya has in place the National Research Fund (NRF), a semi-autonomous agency created under STI act 2013.

b. Rwanda has the Rwanda Innovation Fund and the National Research and Innovation Fund.

c. Tanzania has the National fund for Advancement of Science and Technology which is managed by Tanzania Commission for Science and Technology (COSTECH).

d. Uganda has several funding mechanisms for innovation including the research and innovation fund at Makerere University and the presidential STI Initiative being implemented by Uganda National Council for Science and Technology (UNCST).

However, most of these funding mechanisms appear to be more focused towards research and development with little emphasis on innovation and technology transfer. Furthermore, currently only Rwanda has a standalone innovation fund. Hence, there is need to put in place a mechanism to channel more resources to innovation and technology transfer.

2.7.3. Access to funding by inventors, innovators, and start-ups

In terms of raising money for investment in innovations, start-ups in EAC countries are doing fairly well. Between 2019 and 2022, East African start-ups raised US$2.3 billion. The amount represents 23% of the overall funds raised by African start-ups during the period. In the same period, Kenyan start-ups attracted most of those funds (US$1.9 billion), while Tanzanian start-ups raised over US$152 million, Uganda (US$125 million), Ethiopia (US$46 million), Rwanda ($23 million), and Sudan ($6 million).

Despite this impressive performance, statistics show that most start-ups that received more than $1 million in funding in 2019 were founded by expatriates, or both foreigners and locals. For example, only six percent of the Kenyan start-ups that raised over US$ 1 million, were started by local entrepreneurs, while Uganda had only one local company, out of the six start-ups that received funding above $1 million in the same period. Furthermore, most start-ups in the region face several challenges which include limited access to finance, lack of business and pitching skills, lack of information about the available financing opportunities, lack of institutional support to link start-ups with financing opportunities and lack of independent framework to evaluate technology readiness levels to enhance confidence of investors. In addition, currently there is no credit guarantee scheme to provide de-risking mechanisms for innovators and start-ups.

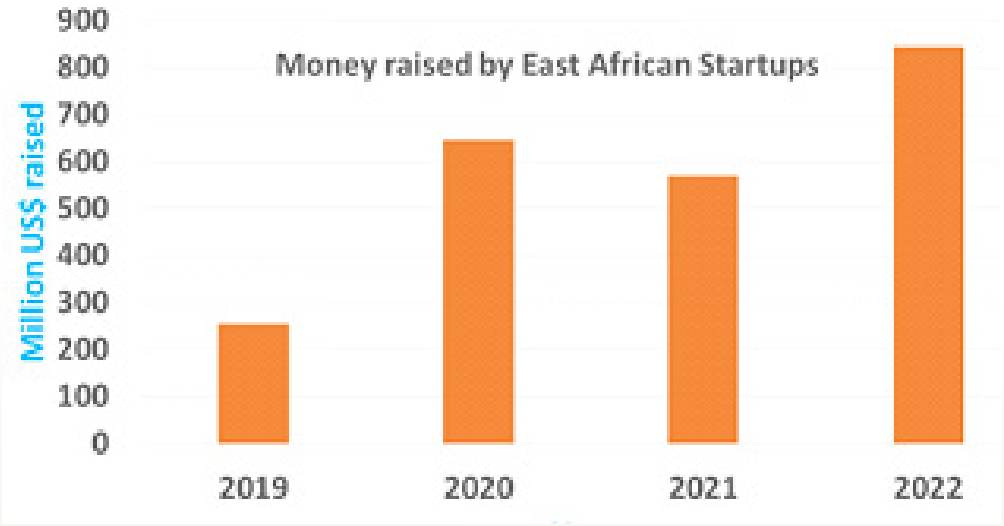


Figure 2 4:Funds raised for East African Startups

2.7.4. Existing government funding mechanisms for women and youths

In all the EAC countries, there are a variety of funding mechanisms that can be tapped by innovators and start-ups. For example, in Tanzania, using the Local government finance act, the Government of Tanzania directed all municipal authorities in the country to set aside 10% of their annual revenue to support entrepreneurship activities amongst women, youth, and people with disabilities (PWDs). In Uganda, there is the Uganda Women Entrepreneurship Programme (UWEP), which aims to increase women's access to financial services and give them the tools they need to grow their businesses, add value, and market their goods and services. In Kenya, there are three funds that target women, and youth to support entrepreneurship activities. These are: the Youth Enterprise Development Fund, Women Enterprise Fund, and the UWEZO Fund. However, in their current form, these funds have limited modalities that can address the unique needs of innovators, start-ups, and innovation hubs.

2.7.5. Mobilizing local and diaspora investments in start-ups

All the six countries have in place investment policies, legislations, and structures. The Kenya Investment Authority, Rwanda Investment and Export Promotion Agency, the Uganda Investment Authority and The Burundi Investment Promotion Agency are all agencies established to promote investments in the respective countries guided by the relevant existing policies and legislations. However, these policies and legislations have limited mechanisms for attracting local and diaspora investments to start-ups and innovation hubs.

2.8. ACCESS TO INFORMATION FOR INNOVATION AND TECHNOLOGY TRANSFER.

Some progress has been made to enhance access to innovation and technology transfer information by various users including innovators, start-ups, researchers, and other innovation consumers, both in urban and rural setups. These include the use of patent information system, technology and innovation extension services, and the industrial information strategies.

2.8.1. Use of patent information system

In EAC countries, the use of patent information in universities and R&D organizations has increased in the recent past, following the establishment of Technology Information Support Centres (TISCs) by national intellectual property offices through support from the World Intellectual Property Organization (WIPO). TISCs facilitate innovators to access high quality innovations and technological information. However, the level of usage of TISCs has remained low, due to lack of awareness by researchers, financial constraints, and lack of support by senior management of the host institutions.

2.8.2. Technology and innovation extension services

Most of the universities and research organizations have established centres and programs to provide information related to innovation, industrial development, and technology transfer. Industrial information services are also being provided by ministries of industrializations in Partner states. However, the provision of these technology and innovation extension services are negatively affected by lack of funds, human resources, and infrastructures.

2.8.3. Access to information by innovators, start-ups and managers of innovation hubs

Lack of access to information on available funding opportunities; innovation hubs and related support infrastructure, specialised innovation laboratory, skills providers and mentors, markets, and government support services, is one of the critical challenges facing innovators as well as managers of start-ups and innovation hubs in the region. Availability of accurate, reliable and valuable information depend much on the presence of information platforms or machineries which collect, analyse and disseminate

knowledge to stakeholders. Such platforms are currently not available in any of the five countries. EAC countries can adapt the China model by creating a series of technological and innovation information centres to enable inflow of knowledge and information resource to technology transfer stakeholders[31].

2.8.4. Industrial Information Strategies

At the regional level, the East African Community Industrial Policy (2012-2032) has emphasised the need for a systematic scheme for collecting, processing, storing, and disseminating information on industry in East Africa, as the current institutional capacity is insufficient. This can be done by:[32]

a. Instituting a mechanism for the regular collection and processing of industrial statistics and technical information on industrial production, as well as its dissemination to the end users through regular industrial census/surveys.

b. Developing a harmonised system for the collection, processing and reporting of industrial statistics and strengthening the capacity of national and regional industry bodies to collect and manage industrial statistics.

c. Promoting collaboration with other regional blocs and international organisations in sharing and dissemination of industrial information.

d. Creating an electronic industrial information and resource centre as a one-stop shop for manufacturing industry information.

e. Enhancing the capacity for competitiveness analysis and provision of policy advisory services including industrial intelligence.

2.9. INNOVATION AND TECHNOLOGY MANAGEMENT AND PROTECTION

The East Africa countries have made significant advances in strengthening the administration and management of intellectual property rights. At the region level, there is the EAC Regional Intellectual Property Policy (2020). At the National level, significant progress has been realized in developing policy, legislative and institutional framework for the management of intellectual property rights. The establishment of agencies such as Kenya Industrial Property Institute (KIPI), Business Registration and licencing Agency (BRELA), Uganda Registration services Bureau (URSB) and Rwanda Development Board (RDB) has also contribute to strengthening the IP ecosystem. At the institutional level the concept of institutional IP policy is being embraced by universities and research organizations as a tool for enhancing management of intellectual property. Few universities like Moi University, University of Nairobi, Kenyatta University, Dar-es-Salaam University and Makerere University have had IP policies for more than 10 years, and some have since revised them. University of Rwanda adopted its IP policy in 2018.

[31]Mwabukojo, E. (2020). Technology Transfer Strategy: A Neglected Approach in Tanzania.
[32]East African Community Industrialization Policy 2012 – 2032

Despite commendable progress, challenges and gaps still abound, which include:

a. Low level of IP awareness amongst the EAC population.

b. Limited IP training and education.

c. Lack of national IP policies and strategies in some EAC countries. Despite previous attempts to develop national IP strategies and policies, only two countries (Rwanda and Uganda) have in place these Policies.

d. High cost of processing IP applications.

e. High cost of enforcement of rights in case of infringement and subsequent patent litigations.

f. The level of innovation, technology transfer and commercialization are very low.

g. There are very few universities that have in place IP policies. Furthermore, even where there are IP policies, effective implementation remains a challenge, because most of them lack have policy implementation plans.

h. As mentioned earlier, protection of innovation remains a challenge for most innovators and start-ups. Lack of awareness on IP, lack of information on IP, lengthy protection process, high costs of patents applications and maintenance as well as weak enforcement are some of the challenges sited by the start-ups.

2.10. UPTAKE OF EMERGING TECHNOLOGIES IN THE REGION:

EAC countries are amongst the leaders in the region on exploitation of emerging technologies including block chain, artificial intelligence, machine learning and internet of things. These technologies are finding applications in all sectors of the economy including education, agriculture, health, and manufacturing.

a. In education AI is already being used in the following areas: personalized learning, improving students' progress, intelligent tutor, supporting teachers and improving quality of education, improving course contents, reduce cost of education, and promoting accessibility and inclusivity in education.

b. In agriculture digital technologies are being deployed to provide advisory, financial and procurement services.

c. In Health sector, digital technology applications are currently being used in such areas as health monitoring benefit/risk assessment, disease prevention and management, medication management, early detection, prediction and diagnostic tools, surgical procedures, as well as health administration.

d. In Manufacturing, emerging technologies are being used in design custom Design customization, product development, shop floor performance improvement, Logistics optimization, predictive maintenance, generative design, price forecasting of raw material, robotics, quality assurance, inventory management and process optimization.

Despite this progress, there are still several challenges associated with developing and deployment of emerging technologies. These include:

1. **Lack of mechanisms to collect data:** Access to data is a major challenge facing developers of AI solutions in Africa. Some of the emerging technologies require lots of data to train them, a resource that is currently scarce in Africa. In some cases, even the data that is currently available is often largely irrelevant. The more data is available, the better and more effective results this technology will deliver.
2. **Lack of Infrastructure:** Access to robust, ubiquitous, and affordable broadband infrastructure is a prerequisite for AI development and uptake. While in recent years there has been a dramatic improvement in the quantity and quality of telecommunications infrastructure in Sub-Saharan Africa still has more to do to ensure adequate connectivity infrastructure is in place[33]. African organizations and entrepreneurs that could be developing AI technology lack access to stable Internet connections and frequently are deficient in even more basic complementary infrastructure like electricity and roads. Without these foundations, AI's potential benefits is limited to and enjoyed only by a few elites[34]. The connectivity index of the East African countries has improved but they are still below 50% score[35]. At country level, Kenya leads at 53.2, followed by Uganda at 47.4, Tanzania at 45.2, Rwanda at 41.9, DRC Congo at 30.5, Burundi at 25.1 and South Sudan at 14.4.

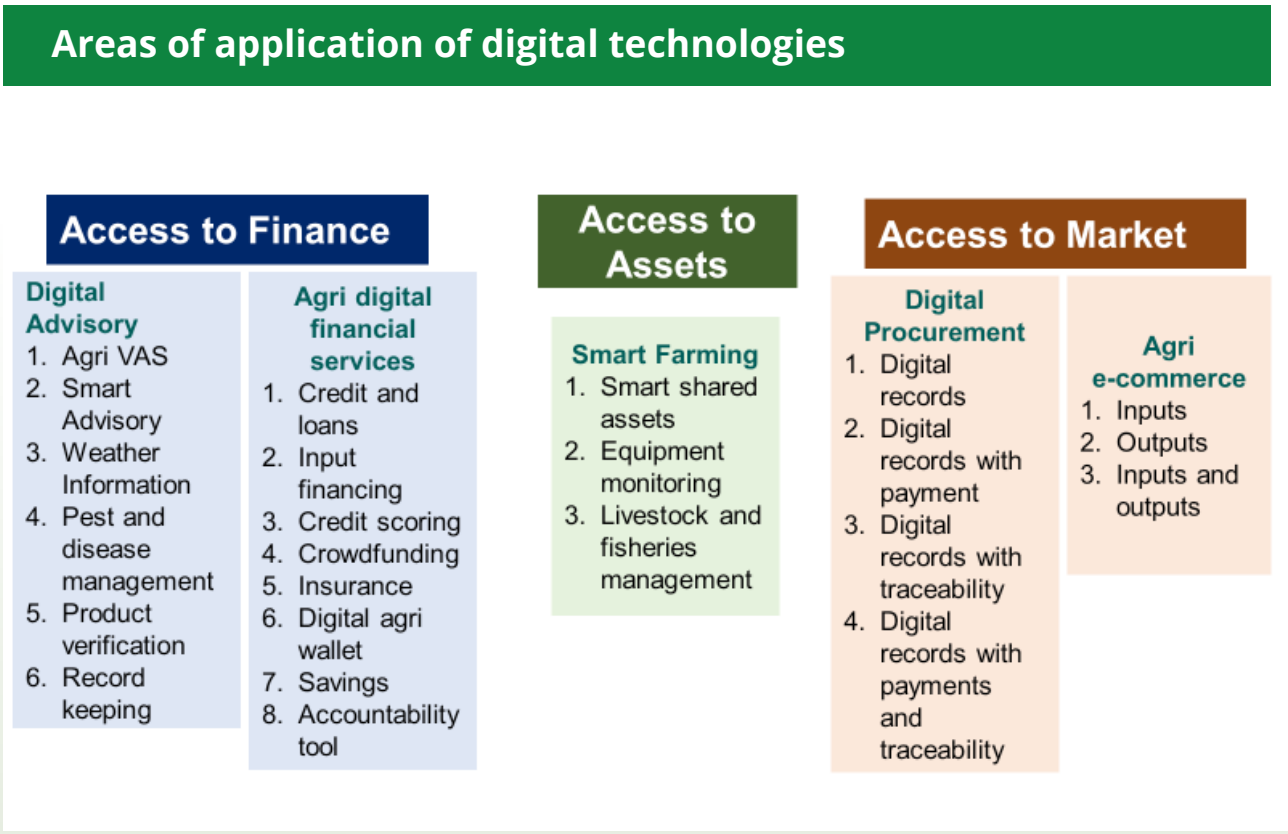


Figure 2 6:Digital Technology Areas of application

[33]World Bank Group, Africa's Pulse: An analysis of issues shaping Africa's economic future, Office of the Chief Economist for the Africa Region, April 2017, Volume 15, p. 35-43
[34]World Wide Web Foundation, Artificial Intelligence: Starting the policy dialogue in Africa, December 2017,
[35]https://www.mobileconnectivityindex.com/

3. **Inadequate investment in research and development:** Inadequate investments in research and development is an important obstacle. EAC countries must develop innovative financial instruments and public-private partnerships to fund the development of local solutions (Youssef & Kevin, 2020).

4. **Inadequate Skills and training:** Lack of relevant technical skills, particularly for young people, is a growing threat (Youssef & Kevin, 2020). This skills gap means that those who would have otherwise been at the forefront of building AI are left out, preventing the continent from harnessing the full potential of transformative technologies and industries. Gadzala, (2018) notes that countries where data ecosystem and infrastructure are wanting, and the workforce is not yet equipped with the skills necessary to adopt and advance AI solutions, widespread adoption of the technol¬ogy is often a challenge.

5. **Policy Issues:** The EAC stakeholders agreed that there is inadequate policies and legislation to support the development and deployment of emerging technologies. Few EAC countries have put together policies and strategies, such as the digital economy strategy, ICT policies, draft AI policy and ethical guidelines, strategy for emerging technology and the strategy for fourth industrial revolution, most of them are still in draft forms [36].

6. **Language and Locally Relevant Content:** Despite existence and availability of several emerging technologies in different sectors, the level of adoption of these technologies remains low. This is mainly attributed to lack of availability of these technologies in local language. Currently, most of the available emerging technologies applications are largely built-in major languages such as English and Chinese; very few applications understand many African languages

2.11 INDUSTRIAL INNOVATION BUILDING AND SUPPORT IN THE REGION

Inclusive and sustainable industrialization, together with innovation and infrastructure, is key to the realization of dynamic and competitive economic development efforts of the EAC countries[37]. The contribution of manufacturing to Gross Domestic Product (GDP) in East Africa is estimated at 8.9%, which is considerably below the average target of about 25% that all the five Partner States have set for themselves to achieve by 2032[38]. Whereas the EAC region is endowed with enormous resources with the potential for industrialization, these remain untapped, due to, amongst others, limited investment in R&D, and low capacity of support institutions[39]. Therefore, policies that support manufacturers and processors in using technological improvements to enhance industrial performance are required to encourage industrial innovation. If built, robust ecosystems for industrial innovation contain enormous potential for EAC region.

To help determine the right mix of industrial policies, ACET has proposed ten policy actions to support industrial innovation in Africa, which can be adopted to EAC region[40]:

[36]Nayebare, "Artificial Intelligence Policies in Africa Over the Next Five Years"
[37]Industry, innovation and infrastructure – why it matters . Available at https://www.un.org:
[38]Industrialization and SMEs Development in EAC. Available at https://www.eac.int
[39]Final EAC Industrialization policy. Available at https://www.eac.in
[40]https://acetforafrica.org/research-and-analysis/insights-ideas/commentary/industrial-innovation-the-next-frontier-for-african-progress

1. Provide forums and venues for the private sector, technical colleges and universities, and research and development institutions to work collaboratively and spur additional industrial innovation.
2. Increase spending and promote collaboration across government departments and agencies responsible for industrial innovation policy and support.
3. Invest more in capacity and skills building through STEM engagement.
4. Tap into higher segments of the value chain by engaging in sectors that are growing or have the potential to grow.
5. Support firms to become competitive among other lower middle-income countries where industrial innovation agendas are gaining prominence.
6. Improve access to finance and technical assistance for SMEs in the informal sector and help them benefit from the innovation being made in larger or related industries by linking them to larger value chains.
7. Support tech hubs and innovation centers and avoid disincentivizing policies.
8. Move from technology transfers to technological learning and innovation capability building.
9. Develop robust, yet realistic, industrial innovation strategies that benefit from extensive input from the private sector.

2.12 SWOT ANALYSIS

Based on the discussion presented, the status of the innovation and technology transfer in the EAC region can be summarised by the SWOT analysis table provided here below:

STRENGTHS	WEAKNESSES
1. Presence of policies on STI, Intellectual Property in most of the EAC countries. 2. Presence of national institutions responsible for STI and IP. 3. Growing number of start-ups in the region dominated by young and education people. 4. Growing number of innovation hubs in the region to support the innovators and start-ups. 5. Universities and research organizations have innovation support structures such as business incubation facility, common manufacturing facility, technology transfer offices, business accelerators and pilot projects. 6. All the EAC countries have established funding mechanisms for research, development, and innovation. 7. Some universities and research organizations in the region have in place intellectual property policies to spur innovation and technology transfer. 8. EAC countries have already started developing and deploying emerging technologies in agriculture, health, manufacturing and education, amongst others.	1. Lack of policies and strategies on innovation, technology transfer, commercialization of R&D results and intellectual property in most of the countries. 2. Limited mandates of STI and IP institutions to promote innovation and technology transfer. 3. Weak coordination of STI and IP institutions. 4. Lack of stand-alone agencies responsible for innovation and technology transfer. 5. Disparity in access to innovation hubs 6. Low participation of women in the innovation ecosystem 7. The existing innovation and technology transfer facilities are inadequate, ineffective, due to low staffing and funding levels. 8. Limited access to funding for innovation and technology transfer by innovators, start-ups and researchers for technology transfer and commercialization. 9. Access to information for innovation and technology transfer remains a major challenge for innovators, start-ups and researchers. 10. The implementation of existing IP policies is weak and the appreciation of IP by innovators and researchers is inadequate. 11. Lack of data, infrastructure, skills, and training as well as policies and strategies remains a challenge for the exploitation of emerging technologies in the region.

OPPORTUNITIES	THREATS
1. The region's combined population of over 300 million provides a huge market for uptake of locally developed innovations targeting prioritised sectors of the economy. 2. The region's youthful population can be tapped to spur innovation and technology transfer. 3. The present move by other countries in Africa and the region to develop innovation policies, innovation funds and standalone innovation agencies, is something the EAC countries can learn from. 4. The rapidly growing number of innovation hubs in the African region in South Africa, and Nigeria also provides opportunities for peer-to-peer learning. 5. The current interest at African Union to promote entrepreneurial universities will bring lessons learned to the universities in EAC region. 6. The rapid growth of emerging technologies global and the business opportunities it provides is something that the EAC countries need to take advantage off.	1. Over dependence on technologies from developed countries may negatively impact on innovation and technology transfer at local level. 2. Youth unemployment, if not properly managed, may lead to misdirection of youth innovativeness and creativity. 3. Unplanned development and adoption of emerging technologies may enhance inequality within the region. 4. The current situation where large percentage of investment capital is secured by start-ups founded by foreign nationals, if not properly managed, may create disquiet by local start-ups. 5. Ever expectations by the partner states

3 VISION, MISSION, STRATEGIC OBJECTIVES AND STRATEGIES

3.1 INTRODUCTION

The vision of the Sixth EAC Development Strategy (2021/22-2025/26) is to transform the East African Community into a stable, competitive, and sustainable lower-middle income region by 2030. It is focused on building a momentum towards post-COVID-19 recovery and accelerating regional adaptation to the dynamic socio-economic environment. This vision is consistent with the pursuit of socio-economic transformation agenda of the region as envisioned in East Africa Community Vision 2050.

This East African Regional Innovation and Technology Transfer Strategy hopes to contribute to the realization of the Sixth EAC Development Strategy (2021/22-2025/26) and the long-term development agenda (EAC Vision 2050). The strategic direction of this regional innovation and technology transfer strategy is defined by the vision, mission, and strategic objectives presented here below.

3.2 VISION

An Innovation Driven Regional Economic Transformation

3.3 MISSION

To accelerate the realization of regional economic transformation through strengthening of the sub-national, national, and regional Innovation Ecosystem

3.4 STRATEGIC OBJECTIVES

The above vision and mission will be realized through the following eleven (11) strategic objectives:

1. To strengthen the legal and policy framework supporting innovation and technology transfer.
2. To strengthen institutional framework supporting innovation and technology transfer.
3. To enhance access by innovators and start-ups to innovation support structures.
4. To strengthen innovation, technology and knowledge transfer in Universities and research organizations.
5. To enhance skills and talents for innovation, technology, and knowledge Transfer.
6. To strengthen innovation and technology management and protection.
7. To enhance access to funding for innovation and technology transfer.
8. To enhance collaboration, linkages, and partnerships in knowledge creation and transfer.
9. To strengthen provision of information services on innovation and technology transfer.
10. To enhance development and deployment of emerging technologies.
11. To strengthen industrial innovation building and support

3.5 GUIDING PRINCIPLES

This EAC regional innovation and technology transfer strategy is based on the following 10 guiding principles:

1. Stakeholders' engagement and participation in the implementation.
2. Gender equality.
3. Inclusivity.
4. Ownership by the partner states.
5. Cost-effectiveness.
6. Collaboration and partnerships.
7. Ethical considerations.
8. Responsive development and deployment of innovation and technologies.
9. Building synergy.
10. Empowerment.

3.6 STRATEGIES AND ACTIVITIES

3.6.1 Strengthen legal and policy framework for innovation and technology transfer

Despite significant progress made, there are- still gaps and challenges regarding existing legal and policy framework for innovation and technology transfer in the region. These include: the low levels of implementation of existing policies in some EAC countries; some existing legislation and policies on STI and Intellectual Property are old years and therefore require review, some policies and strategies remain in draft form; and none of the six countries have standalone policies and strategies on innovation, technology transfer and commercialization of innovations. There is also no framework that can enable countries to self-evaluate how they are currently performing in terms of innovation and technology transfer.

Strategies

To strengthen the existing legal and policy framework for supporting innovation and technology transfer, the following strategies will be pursued:

1. Review and update existing national policies.
2. Strengthen the implementation of the existing policies.
3. Develop new policies at the national levels, where they do not exist.
4. Develop frameworks and guidelines to support university-industry collaboration, sharing of existing infrastructure, and sub-contracting.
5. Develop a maturity framework for innovation and technology transfer to be used by partner states to evaluate their performance in terms of innovation and technology transfer.

Activities

To realise the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Review of existing policies: Map and identify all policies older than 10 years which are relevant to innovation and technology transfer and support their reviews to strengthen those aspects related to innovation and technology transfer.
2. Develop policy implementation plans: Support the development of implementation plans for existing policies aligned to national development planning cycles in respective countries.
3. Facilitate adoption of existing draft policies: Support the completion and adoption of existing draft policies, such as (i) national innovation policy of Tanzania (2022), (ii) national STI policy (2020) of Kenya, and the National IP policy of Tanzania (2022).
4. Develop new national IP policies: Support the development of national Intellectual Property policies for Burundi, Kenya, and South Sudan.
5. Develop innovation policies: Support the development of innovation policies as well as national entrepreneurship policies for Kenya, Burundi, Uganda, Rwanda and South Sudan.
6. National innovation and technology transfer maturity framework: Develop a maturity framework that partner states can use to evaluate their performance on innovation and technology transfer based on the 11 objectives.

3.6.2 Strengthen institutional framework for innovation, technology and knowledge transfer

The EAC Partner States have put in place institutions to support innovation and technology transfer. However, the capacity and ability of these institutions to deliver on their mandates are limited due to inadequate staffing, funding, coordination, and mandate on innovation and technology transfer. Furthermore, in most of the EAC countries, very limited efforts have been directed towards promoting inclusive innovation ecosystem which also takes into consideration grassroot innovation as well as innovation in the informal sector. Finally, in all the EAC countries, only Kenya has a stand-alone Innovation and Technology Transfer Agency.

Strategies

To strengthen the existing institutional framework that support innovation and technology transfer, the following strategies will be pursued:

1. Strengthen the capacities of the existing innovation agencies.
2. Expand the scope of the existing national commissions for science and technology to include functions related to innovation and technology transfer.
3. Improve on the coordination of agencies responsible for innovation and technology transfer at sub-national, national, and regional level.
4. Strengthen innovation in the informal sector and grass-root innovation.

Activities

To realise the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Develop capacity strengthen plans for existing STI agencies: Undertake capacity gaps assessment for each of the six national agencies responsible for innovation and technology transfer and prepare and implement capacity strengthening plans for each of them.
2. Expand the mandates of STI agencies to include innovation and technology transfer: Undertake a review of the mandates and functions of each of the five NCST, identify barriers related to innovation and technology transfer, where they exist, and develop and implement plans to address the barriers.
3. Develop a framework for coordination of the various STI agencies: Document coordination challenges of the various agencies responsible for innovation and technology transfer in each partner state and propose and implement interventions to improve the performance of the innovation ecosystem at the sub-national and national levels.
4. Develop a plan for strengthening innovation in the informal sector: Review the challenges related to innovation and technology transfer in the informal sector and grassroot innovation levels and prepare and implement an intervention plan.

3.6.3 Enhance access by innovators and start-ups to innovation support structures

To support the start-ups, all the six EAC countries (like other regions in SSA) have many innovation hubs (hubs, incubation services, accelerators, makerspaces and co-working spaces). The hubs are government and NGO funded with some also private sector driven. EAC governments are recognising the important role the innovation hubs are playing in support enterprise development and the growth of the innovation ecosystem in these countries. However, these support structures have several challenges. These include limited access by innovators and start-ups to innovation hubs, wide disparity, with more innovation hubs established in urban areas compared to rural areas; limited participation of women in managing and running innovation hubs as a business; lack of specialization and performance parameters for innovation hubs; lack of evidence to demonstrate the impact of innovation hubs to the economy; and limited innovation hubs targeting emerging technologies.

Strategies

To strengthen the innovation support structures for innovators and start-ups, EASTECO will work with the EAC Partner States and their agencies to pursue the following strategies:

1. Enhance access by innovators and start-ups to innovation hubs.
2. Reduce the existing wide disparity between rural and urban areas on availability of innovation hubs.
3. Increase the participation of women in managing and running innovation hubs as a business.
4. Promote awareness on the contribution and impact of innovation hubs to the economy.
5. Strengthen innovation hubs targeting emerging technologies.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Develop a subsidy program for access to innovation hubs: Develop a framework for subsidizing the cost of usage of existing facilities, particularly for innovators, early-stage start-ups, women innovators and as well as marginalized groups such as refugees and people living with disabilities.
2. Develop a PPP framework for hubs: Support the development of a framework for collaboration between the governments and the private sector to build innovation hubs at sub-nation and rural areas.
3. Develop and implement incentive structure for women: Develop and implement incentive structure to support the participation of women in running innovation hubs as business.
4. Undertake impact studies: Undertake studies to demonstrate the impacts of the innovation hubs in the economy of the various EAC countries to generate evidence to demonstrate the important role the innovation hubs are playing in the economy.
5. Formulate hubs performance indicators: Develop parameters for measuring the performance of innovation hubs.
6. Map innovation ecosystem: Undertake a mapping of the innovation ecosystem at subnational and national levels.
7. Undertake innovation surveys: Undertake regional innovation surveys.

3.6.4 Strengthen innovation, technology and knowledge transfer in universities and research organizations

Most of the research organizations in the EAC region have in place structures to support innovation, technology transfer and commercialization of R&D outputs. These include incubation services, common manufacturing facility, pilot plants, prototype development units and product development laboratories. These facilities are made available to support researchers within these organizations as well as innovators, start-ups and SMEs from outside the organizations to access innovation and technology transfer services. They also support commercialisation of innovations generated internally by these institutions. Similarly, some universities in the region have in place technology transfer offices (TTOs) or equivalent structures to support technology transfer and commercialization of R&D outputs. The majority also have in place institutional IP policies that address issue of generation, protection and commercialization of innovation and intellectual property assets. However, the impact of these support structures to technology transfer and commercialization has remain minimum due to several challenges, for which interventions are required.

Strategies

To strengthen the innovation support structures for innovators. Start-ups and researchers EASTECO will work with the EAC Partner States to pursue the following strategies:

1. Strengthen technology transfer offices.
2. Develop skills for technology transfer.
3. Develop incentives structures to enhance participation of researchers in technology transfer.
4. Promote the development of the technology transfer infrastructure.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Develop TTOs guidelines: Develop guidelines for the establishment and operating technology transfer offices for the universities and research organizations in the region.
2. Develop career progression guidelines: Develop career progression guidelines for technology transfer managers for the region.
3. Develop training and certification programs: Develop and implement training programs and certification framework for technology transfer managers.
4. Review the promotion criteria: Promote the review of promotion criteria for researchers in universities and research organizations.
5. Establish more Technology Transfer Infrastructure: Support the establishment of the following technology and knowledge transfer infrastructure at regional and national levels: (a) business incubation services; (b) common manufacturing facilities; (c) industrial pilot plants; (d) reverse engineering and prototyping centres; (e)Technology Transfer Offices; (f) technology extension services; (g) support industrial upgrade and modernization; and (h) strengthen and expand community processing centres initiatives.
6. Develop guidelines for spinoff: Develop a guideline for establishing spinoff companies from innovation arising from the research activities of researchers and students in universities and research organizations.

3.6.5 Enhance Technology Management and Protection

Whereas innovation and technology management and protection is key to promotion of technology transfer and commercialization, there are still gaps at regional; national, institutional, and start-ups levels, which need to be addressed. These include low level of IP awareness, high cost of processing patent applications, lack of national IP policies, and lack of and low level of implementation of institutional IP policies.

Strategies

To strengthen innovation and technology management and protection at regional, nation and institutional levels, EASTECO will work with the EAC Partner States and their agencies to pursue the following strategies:

1. Strengthen the appreciation of the role of intellectual property as a catalyst for innovation, technology transfer and economic development.
2. Promote IP training and education in the region.
3. Promote the development of policies, guidelines, plans and frameworks to enhance the use of intellectual property for economic development at regional, national, and sub-national levels.
4. Strengthen the use of IP by innovators and start-ups.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Develop IP awareness and outreach plans: Support the development and implementation of IP awareness and outreach plans at regional, national, and sub-nation levels.
2. Create centres of excellences in IP training and education: Support the creation of centres of excellence in IP training and education at regional and national levels.
3. Review implementation progress of IP policy: Review the progress of implementation of the EA Regional Intellectual Property Policy and develop and implementation plan with a focus on innovation and technology transfer.
4. Develop new IP policies and strategies: Support the EAC countries to develop and implement robust national intellectual property policies and strategies.
5. Establish standalone IP offices: Support the EAC countries to establish independent (standalone) national intellectual property offices
6. Develop institutional IP policies: Support universities and research organizations in the region to enhance the use of IP policies as a catalyst for innovation and technology transfer.
7. Enhance IP protection: Support start-ups and innovation hubs to protect their innovation and use it as a tool for business development and mobilization of investment funding.
8. Establish IP fund: Support the creation of IP fund in universities and research organizations.

3.6.6 Strengthen skills and talents required for innovation and technology transfer

Skills and talents have been identified by the reviewed global innovation measuring indices as well as through interviews of the stakeholders (start-ups, innovation hubs and government agencies) as a major gap that requires attention to enhance innovation and technology transfer in the region. Interventions are therefore required to enhance access to skills and talents of the key actors in the EAC region innovation ecosystem.

Strategies

To strengthen the skills and talents of innovators, start-ups and managers of innovation hubs and technology transfer offices, EASTECO will work with the EAC Partner States and their agencies to pursue the following strategies:

1. Strengthen the capacities of innovators and start-ups with skills such as innovation, technology transfer, business development, pitching and fundraising, marketing, human resource management, financial management, as well as communication and networking.
2. Strengthen the capacities of technology transfer managers with various skills such as patent drafting, innovation licensing, negotiation skills, IP audits, IP valuation, business development, fundraising, communication and networking.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

a. Establish online training modules: Develop online training modules for innovators and start-ups; managers of innovation hubs; as well as for managers of Technology Transfer Offices and/or IP Management Office (IPMO).

b. Enhance mentorship: Promote mentorship and peer-to-peer learning.

c. Establish innovation expert platform: Establish an innovation expert platform to be accessed online by innovators, managers of innovation hubs and managers TTOs.

d. Establish knowledge platform: Develop and regularly update a knowledge platform on success stories and best practices on innovation and technology.

e. Certification mechanism: Develop and implement certification mechanism for innovation and technology transfer practitioners.

3.6.7 Enhance access to funding for innovation and technology transfer;

The situation analysis identified the following gaps/challenges on funding of innovation and technology transfer activities in the region.

a. Most of the EAC countries do not have a standalone innovation fund.

b. The current focus of the existing STI funding is on research. Innovation and technology transfer is often overlooked.

c. There is limited information on existing funding opportunities.

d. Funding criteria for universities and research organizations do not include innovation and technology transfer.

e. There is no de-risking mechanism for funding early-stage innovation and start-ups.

f. The capacities of existing innovation hubs to support start-ups in resource mobilization is limited.

Strategies

To enhance access to funding for innovation and technology transfer by innovators, researchers, start-ups and managers of innovation hubs, EASTECO will work with the EAC Partner States and their agencies to pursue the following strategies:

a. Support the development of standalone innovation funds or restructuring of existing research and development funding mechanisms.

b. Enhance access to information on existing funding opportunities.

c. Develop mechanism for de-risking mechanism for funding early-stage innovation and start-ups.

d. Strengthen the capacities of existing innovation hubs to support start-ups in resource mobilization if limited.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Develop standalone innovation fund: Support the EAC countries to develop and implement standalone innovation funds.
2. Restructure Existing STI fund: Support the EAC countries to restructure existing STI funding mechanisms to include innovation and technology transfer.
3. Review funding criteria for universities: Support EAC countries to review their funding criteria for universities and research organizations to include innovation and technology transfer.
4. Develop a de-risking mechanism for funding start-ups: Support the EAC countries to develop a de-risking mechanism for funding early-stage innovations and start-ups.
5. Develop capacity enhancement framework for hubs: a regional framework for enhancing the capacities of existing innovation hubs to support start-ups in resource mobilization.
6. Develop incentive structures: Support the EAC countries to develop incentive structures to enable citizens in the diaspora to channel funding to early-stage innovations and start-ups.
7. Review existing youth and women funds: Review existing funding programs for youth, women, and SMEs to include funding of innovators and start-ups.

3.6.8 Enhance Collaboration, Linkages and Partnerships in knowledge creation and transfer

The following challenges should be addressed to strengthen collaboration, partnerships, and linkages in knowledge creation and technology transfer by players in the EAC region innovation ecosystem: lack of framework on academia and industries collaborations at national and institutional levels; weak or lack of networks for start-ups, innovation hubs and technology transfer managers; lack of framework for sharing of existing infrastructure to support innovation and technology transfer; lack of policy on sub-contracting and linking of start-ups and SMES with large industries; and weak coordination mechanism of start-ups and innovation hubs at the national and sub-national levels.

Strategies

To strengthen collaborations, linkages and partnerships of actors of the innovation ecosystem at regional, national and sub-national levels, EASTECO will work with the EAC Partner States and their agencies to pursue the following strategies:

1. Promote collaboration in knowledge creation amongst universities and research organizations in the EAC region.
2. Strengthen academia-industry linkages.
3. Develop and implement frameworks for collaborations amongst actors of the innovation ecosystem in knowledge creation and transfer.
4. Strengthen the networks of actors of innovation ecosystem.
5. Promote sharing of existing infrastructures for innovations and technology transfer.
6. Organise forums for information exchange and peer to peer learning.
7. Promote inclusivity in innovation and technology transfer.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Fund collaborative research activities involving research organizations and universities in the partner states.
2. Develop incentive framework to support research-industry collaboration on innovation and technology transfer.
3. Introduction of tax incentives for research and development.
4. Develop incentive framework to support linkage of start-ups and SMEs with companies through sub-contracting.
5. Develop guidelines for coordination of start-ups and innovation hubs.
6. Establish a regional network of technology transfer managers.
7. Establish a regional network of innovation hubs.
8. Establish a regional network of innovators and start-ups.
9. Organise annual forums for information exchange and peer-to-peer learning for start-ups, managers of innovation hubs and technology transfer managers.
10. Develop and implement frameworks for collaborations amongst actors of the innovation ecosystem.
11. Create a platform for show-casing innovations with novelty.
12. Create a rewarding system for the innovations/innovators.

3.6.9 Strengthen the provision of innovation and technology transfer information services.

Some progress has been made to enhance access to innovation and technology transfer information by various users including innovators, start-ups, researchers, and other innovation consumers, both in urban and rural setups. These include the use of patent information system, technology and innovation extension services, and the industrial information strategies. However, more interventions are required to enhance access to information by all stakeholders for innovation and technology transfer.

Strategies

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Enhance access and utilization of patent innovation system for innovation and technology transfer;
2. Strengthen technology and innovation extension services;
3. Support partner states to develop industrial information strategies;
4. Enhance access by innovator and start-ups of information related to funding and innovation hubs.

Activities

To strengthen the provision of innovation and technology transfer information services at regional and national levels, EASTECO will work with the EAC Partner States and their agencies to pursue the following strategies:

1. Develop and implement a plan to promote the expansion and use of patent information system for research, innovation and technology transfer activities.
2. Develop and implement a plan to enhance the provision of technology and innovation extension services at regional, national and sub-national levels.
3. Support the development of industrial information strategies at regional and national level.
4. Develop a digital map of existing innovation hubs in each partner states and promote for access by innovators and start-ups.

3.6.10 Enhance development and deployment of emerging technologies

EAC countries are amongst the leaders in the region on exploitation of emerging technologies including blockchain, Artificial Intelligent, machine learning and internet of things. These technologies are finding applications in all sectors of the economy including education, agriculture, health, and manufacturing. For example, in education AI is already being used to support online learning, while in agriculture digital technologies are being deployed to provide advisory, financial and procurement services.

However, job losses, data security, and privacy remains major concerns and fears that must be address through evidence and appropriate policy framework. In addition, lack of data, inadequate skills and talents, inadequate investment in R&D, lack of policy framework, lack of infrastructure, gender equality and inclusivity, language and relevant local contents, are some of the challenges that need to be addressed for the region to fully exploit the potential of emerging technologies.

Strategies

1. Support the development of policies and strategies to drive emerging technologies in the region.
2. Support the development of skills and talents required to drive emerging technologies in the region.
3. Strengthen research on emerging technologies.
4. Strengthen uptake of local developed solutions on emerging technologies.
5. Reduce fears and perception that may negatively affect development and deployment of emerging technologies.

Activities

To pursue the above-mentioned strategies, EASTECO will work with the EAC Partner States and their agencies to undertake the following activities:

1. Review existing policies and strategies: Review the existing policies and strategies related to emerging technologies in the region, identify gaps which will inform the development of new policies and technologies.
2. Develop skills and talents on emerging technologies: Map and identify the skills required for the various emerging technologies and prepare a regional approach for talent cultivation in EAC countries.
3. Strengthen research in emerging technologies: Document and review ongoing research activities in EAC countries in emerging technologies and develop/implement plans to strengthen research in emerging technologies at regional and local levels.
4. Promote collaborative research: Joint collaborative cross-countries research projects on emerging technologies.
5. Prepare data sharing mechanism/framework by local researchers on emerging technologies: Develop a strategy on how to enhance access to data by local researchers on emerging technologies.
6. Manage fears and negative perceptions on emerging technologies: Develop and implement programs to manage fears and perception of use of emerging technologies by various stakeholders. These may include:
    a. Documenting and sharing success stories on deployment of emerging technologies in various sectors of the economy;

       Documenting and sharing best practices in addressing the negative impact of emerging technologies such as job losses, privacy, and security.

3.6.11 Strengthen Industrial innovation building and support

Inclusive and sustainable industrialization, together with innovation and infrastructure, is key to the realization of dynamic and competitive economic development efforts of the EAC countries. The contribution of manufacturing to Gross Domestic Product (GDP) in East Africa is estimated at 8.9%, which is considerably below the average target of about 25% that all the five Partner States have set for themselves to achieve by 2032. Whereas the EAC region is endowed with enormous resources with the potential for promoting resource-based industrialization, these remain untapped, due to, amongst others, limited investment in R&D, and low capacity of support institutions.

Strategies

1. Promote private, public and university collaboration opportunities in creation of industrial innovations.
2. Strengthen institutional support to industrial innovations.
3. Encourage more government support in public-private industry innovations.
4. Provide environment for informal sector to access more funds.

Activities

1. Organise forums and venues for the private sector, technical colleges and universities, and research and development institutions to work collaboratively and spur additional industrial innovation.
2. Develop and implement a framework for supporting firms to become more competitive through industrial innovation.
3. Develop and implement a plan to strengthen existing institutions to provide support for industrial innovation.
4. Develop an incentive structure to improve access to finance and technical assistance for SMEs and informal sector to help them benefit from the innovation being made in larger or related industries by linking them to larger value chains.
5. Develop and implement industrial innovation strategies.

4

STRATEGY IMPLEMENTATION MECHANISM

4.1. STRATEGY IMPLEMENTATION PLAN

This strategy will be implemented within a period of five years (2023-2027). During this period, eleven objectives will be pursued through 48 strategies and 69 actions/activities, as shown in Table 5.1 below.

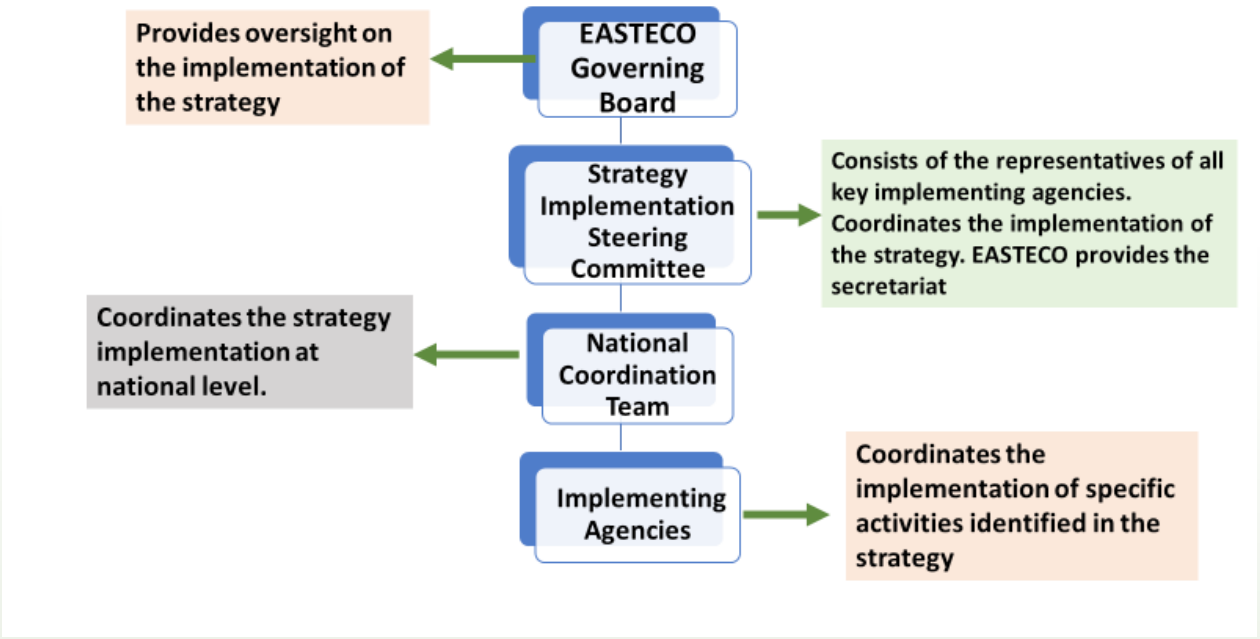
Objectives		Number of strategies	Number of activities
1.	Strengthen legal and policy framework for innovation and technology transfer	5	6
2.	Strengthen institutional framework for innovation and technology transfer	4	4
3.	Enhance access by innovators and startups to innovation support structures	5	7
4.	Strengthen innovation, technology and knowledge transfer in universities and research organizations	4	6
5.	Enhance technology management and protection	4	8
6.	Strengthen skills and talents required for innovation and technology transfer	2	5
7.	Enhance access to funding for innovation and technology transfer	4	7
8.	Enhance collaboration, linkages and partnership for knowledge creation and transfer	7	11
9.	Strengthen the provision of innovation and technology transfer information services	4	4
10.	Enhance development and deployment of emerging technologies	5	6
11.	Strengthen Industrial innovation building and support	4	5
Total	48	69	

Some of these activities will be implemented by EASTECO while most of the activities will be implemented by the Partner States and their agencies with EASTECO providing a facilitating role. The implementation of these activities will lead to a series of outputs and outcomes as shown in the detailed Strategy Implementation Plan in Annex 1.

4.2. IMPLEMENTATION STRUCTURE

The implementation of the EA Regional Innovation and Technology Transfer Strategy will be undertaken by EASTECO, Partner States and their Agencies, as well as the private sector. A four-level implementation structure is proposed, which consists of EASTECO Governing Board, Strategy Implementation Steering Committee, National Coordination Team and Implementing Agencies (Figure 5.1). These organs are briefly described below.

Figure 5.1. Strategy Implementation Structure



4.2.1. EASTECO Governing Board

This is the highest organ of EASTECO and has the responsibility for providing oversight on the implementation of various policies and strategies. Therefore, for the EA Regional Innovation and Technology Transfer Strategy, the mandate of the Board will be to oversee the implementation of the strategy and to mobilize the required resources and support for its implementation. The Board will be expected to receive regular reports, as well as approve annual work plans and budgets related to the implementation of the strategy.

4.2.2. Strategy Implementation Steering Committee

The strategy Implementation Steering Committee will be the organ responsible for overall implementation of the Innovation and Technology Transfer Strategy. The Steering Committee, which will be constituted by EASTECO Secretariat, will consist of representatives of the national Agencies responsible for matters innovation, technology transfer and commercialization of R&D outputs as well as Agencies responsible for intellectual property. Representations of industrial research organizations, agricultural research organizations, universities, private sector, start-ups and innovation hubs as well as business associations will also be invited to be part of the committee. The committee will meet quarterly to receive and consolidate national annual work plans and budgets and prepare quarterly reports for presentation to the EASTECO Governing Board. EASTECO will provide the Secretariat.

4.2.3. National Coordination Team (NCT)

This will consist of all the agencies responsible for the implementation of the Innovation and Technology Transfer Strategy at the national level. This committee, which will be chaired by the EASTECO focal point at national level (mainly the national agency that sits at the EASTECO Governing Board), will be responsible for receiving and preparing a national implementation plans and budgets, at national level. There will also be responsible for mobilizing resources at national level for the implementation of the strategy as well as publicity and monitoring and evaluation of the progress of implementation. The NCT will also be responsible for preparing quarterly reports for submission to the Strategy Implementation Steering Committee.

4.2.4. Implementing Agencies

The actual implementation of the various activities of the strategy will take place at the agency level. The Agencies will only implement those activities that they deem relevant to their mandates, and which are prioritized by their organizations. These activities are expected to be included in their annual work plans and where possible, funded through the national budgets. The heads of the Agencies or their nominees, will coordinate the implementation of the activities and reporting, on a quarterly basis, of the implementation progress to the National Coordination Team.

4.3. COMMUNICATION AND PUBLICITY

Communication will be key in the implementation of the EA Regional Innovation and Technology Transfer Strategy. This strategy should be widely disseminated at regional, national and institution levels. Upon adoption of the Strategy, the Strategy Implementation Steering Committee will prepare a communication plan for the strategy, which will guide communication activities throughout the life of the strategy. Communication will be coordinated at the Secretariat level.

4.4. FINANCING OF THE STRATEGY

The possible funding of the implementation of the strategy will be as follows:

a. EASTECO annual budget

b. Budgetary allocations of the individual implementing agencies and institutions.

c. Resources mobilized from development partners at institutional, national and regional levels.

Upon adoption of the Strategy, the Strategy Implementation Steering Committee will prepare a resource mobilization plan, which will guide mobilization of resources particularly for those activities at the regional levels. Implementing institutions will be expected to also mobilize resources through their existing and potential funders.

4.5. MONITORING, EVALUATION AND LEARNING

The Monitoring, Evaluation, and Learning (MEL) framework has been prepared to guide the monitoring of the implementation of this strategy (see Annex 2). The framework serves as a tool to guide in the overall execution of the East African Regional Innovation and Technology Transfer Strategy. It is expected that the strategy implementation team will update it as necessary to reflect changes in the strategy and ongoing tasks. Updates will also incorporate feedback from stakeholders as well other implementing partners.

4.5.1. Tools for Monitoring

The following tools should be prepared for monitoring the strategy implementation:

a. Annual work plan: A comprehensive annual work plan should be prepared which will guide the continuous monitoring of the implementation of the strategy. Review of monthly performance will inform the preparation of quarterly reports.

b. Quarterly reports and meetings: The implementation team should have quarterly progress meetings which are followed by the preparation of quarterly progress reports.

c. Annual reports and meetings: The implementation team will prepare an annual report consisting of consolidated quarterly progress reports.

4.5.2. Tools for Monitoring

The following two tools should be prepared for monitoring the strategy implementation: Annual work plan: A comprehensive annual work plan should be prepared which will guide the continuous monitoring of the implementation of the strategy. In addition, each Partner State will have its annual work. The second tool will be the quarterly meetings of the technical committee members.

4.5.3. Evaluations

There are four evaluations proposed during the implementation of this strategy:

a. **Early-stage evaluation and learning:** The implementation of this strategy will be unique and complex since it involves EASTECO as well as Partner States and their STI/IP agencies. This will necessitate very keen evaluation and learning. Therefore, an internal evaluation will be undertaken at the end of the first 12 months to get some early feedback on what is working and what are likely to pose problems and initiate early adjustment in the implementation framework.

b. **Mid-term evaluation:** This will be done immediately after the 30th month. The focus of the mid-term's evaluation will be to document progress of implementation of the strategy work plan and the intervention measures undertaken and will equally inform mid-term review of the work plan. This will be done through support of external evaluators.

c. **Final year evaluation:** This should be done either internally or by an external consultant towards the end of fifth year (or at 58 month) specifically to obtain information on lessons learned, which can inform the management after the completion of the strategy period and inform the development of the subsequent one. This could be done internally.

d. **Terminal evaluation:** This should be done by an external consultant at the end of the strategy period. It will focus on the extent of the realization of the strategic objectives/ outcomes, efficiency and effectiveness, relevance, sustainability, impact, and lessons learned from the implementation of the strategic plan.

REFERENCES

1. Ahmad K., Iqbal W., El-Hassan A., Qadir J., Benhaddou D., Ayyash M. and Al-Fuqaha A., (2016). "Artificial Intelligence in Education: A Panoramic Review", https://doi.org/10.35542/osf.io/zvu2n
2. Ayoub, Dan. (2020). "Unleashing the power of AI for education". MIT Technology Review. https://www.technologyreview.com/2020/03/04/905535/unleashing-the-power-of-ai-for education/
3. Besaw C. and Filitz J., (2019). "Artificial Intelligence in Africa is a Double-edged Sword." Retrieved from https://ourworld.unu.edu/en/ai-in-africa-is-a-double-edged-sword#:
4. Brandusescu, A., Freuler J. O. and Thakur D. (2017). Artificial Intelligence: Starting the policy dialogue in Africa. World Wide Web Foundation, 1110 Vermont Ave NW, Suite 500, Washington DC 20005, USA.
5. Buttice, C., (2019). "The Future of Artificial Intelligence in Africa: Risks and Opportunities" The Elephant. https://www.theelephant.info/ideas/2019/04/18/the-future-of
6. Chioma Nwaodike, (2020). "The AI Digital Divide - An African Perspective"
7. Coppin, B. (2004). Artificial Intelligence Illuminated. Boston, MA, USA: Jones and Bartlett.
8. Goddard W. (2020). "AI in Education." Retrieved from https://itchronicles.com/artificial-intelligence/ai-in-education/
9. Makala B., Schmitt M. and Caballero A. (2021). "How Artificial Intelligence Can Help Advance Post-Secondary Learning in Emerging Markets", EM Compass, Note 97.
10. Ndemo B. (2019). Can Artificial Intelligence disrupt education? Retrieved from https://www.businessdailyafrica.com/bd/opinion-analysis/ideas-debate/can-artificial-intelligence-disrupt-education--2274064 on 20th January, 2021.
11. Rasugu M. (2019). "Africa: AI Could Be the Boost Education in Africa Needs", CIO East Africa (Nairobi). Available at: https://allafrica.com/stories/. (Accessed: 25th February 2021).
12. Sagenmuller, I. (2017). How artificial intelligence helps higher education management. Technology for Education Blog, January 19, 2017. Retrieved from: https://www.technologyforeducation.com.
13. UNESCO (2019). I'd Blush if I Could: closing gender divides in digital skills through education. Retrieved from https://en.unesco.org/Id-blush-if-I-could.
14. van der Vorst, Tommy; Jelicic, Nick (2019): "Artificial Intelligence in Education: Can AI bring the full potential of personalized learning to education?", European Conference of the International Telecommunications Society (ITS). Helsinki, Finland, 16th-19th June, 2019, International Telecommunications Society (ITS), Calgary
15. Vincent-Lancrin, S., C. González-Sancho, M. Bouckaert, F. de Luca, M. Fernández-Barrerra, G. Jacotin, J. Urgel and Q. Vidal (2019), Fostering Students' Creativity and Critical Thinking: What it Means in School, Educational Research and Innovation, OECD Publishing, Paris.
16. Vincent-Lancrin S. and Vlies R., (2020). "Trustworthy artificial intelligence (AI) in education: promises and challenges", OECD Education Working Paper No. 21
17. Phatty-Jobe, A., with Seth, A., & Norton, K. (2020). Digital Agriculture Maps 2020 State of the Sector in Low and Middle-Income Countries. GSMA AgriTech and IDH Farmfit. Available Online at: Https://Www. Gsma. Com/r/Wp-Content/Uploads/2020/10/GSMA-Agritech-Digital-Agriculture-Maps-2020-1. Pdf (Accessed May 14, 2021).
18. Tsan, M., Totapally, S., Hailu, M., & Addom, B. K. (2019). The Digitalisation of African Agriculture Report 2018-2019.

ANNEX 1: STRATEGY IMPLEMENTATION PLAN

Strategic Objectives	Activities	Outputs	Time Frame (Year)					Responsibility	Budget
			1	2	3	4	5		In US
Objective 1: Strengthen legal and policy framework for innovation and technology transfer	Map, identify and review all policies older than 10 years	At least 5 policies reviewed						EASTECO, All partner states	200,000
	Support the development of policy implementation plans	At least 6 policy implementation plans developed						EASTECO and All partner states	120,000
	Support the completion and adoption of existing draft policies	At least 3 policy drafts completed						EASTECO, Tanzania, Kenya	60,000
	Support the development of national IP policies and strategy	National IP policies and strategies developed in at least three EAC countries						EASTECO Burundi, Kenya and South Sudan	120,000
	Support the development of innovation policies	Innovation policies developed in at least three countries						EASTECO EAC countries	150,000
	Support the development of frameworks and guidelines for research-industry linkages, equipment sharing, subcontracting and coordination of innovation hubs	At least 5 frameworks and guidelines developed						EASTECO All Partner States	100,000
Objective 2: Strengthen institutional framework for innovation and technology transfer	Strengthen the capacities of the exiting STI Agencies	At least four capacity strengthening plans developed and implemented						EASTECO NACOSTI, COSTECH, NCST Uganda, Rwanda, Burundi and South Sudan	100,000
	Expand the mandates of existing STI Agencies to include innovation and technology transfer	At least the mandates of five Agencies reviewed and implementation plans developed						EASTECO All the countries except Kenya	150,000
	Develop a framework for coordination of the various agencies responsible for innovation and technology transfer	Coordination framework developed in at least three countries						EASTECO and all the countries	30,000
	Prepare and develop a plan for strengthening grassroot innovation and innovation in the informal sector	Plans for improving grassroot innovation and innovation in the informal sector developed in at least three countries						EASTECO and all the countries except Tanzania	72,500

Objective 3: Strengthen innovation support structures for innovators and start-ups.	Develop a framework for subsiding the cost of usage on innovation hubs	Framework for subsidizing the cost of usage of innovation hubs developed in at least three countries						EASTECO Three partner states	60,000
	Develop a PPP framework to support building of innovation hubs.	PPP Framework for building innovation hubs developed in at least four countries						EASTECO Four partner states	100,000
	Develop and implement incentive structure for women involvement in innovation hubs	Incentive structure for women participation in innovation hubs developed in at least five countries						EASTECO Five partner states	100,000
	Undertake studies on the economic impact of innovation hubs	Economic impact studies undertaken in at least 3 countries						EASTECO Three partner states	60,000
	Undertake a mapping of innovation ecosystem at regional and national levels	mapping of innovation ecosystem undertaken in at least three countries						EASTECO Three partner states	60,000
	Undertake a regional innovation surveys	At least two regional surveys undertaken						EASTECO	30,000
Objective 4: Strengthen innovation, technology and knowledge transfer in universities and research organizations	Develop guidelines for establishment and operating technology transfer offices	At least four countries develop and implement guidelines						EASTECO Four partner states	100,000
	Develop career progression guidelines for TTO managers	At least a generic career progression guideline developed						EASTECO	50,000
	Develop and implement training programs and certification framework for TTO managers	At least four training modules developed for TTOs						EASTECO	80,000
	Review of promotion criteria for researchers	At least a generic promotion criterion for researchers developed for adoption by universities and research						EASTECO	50,000
	Support the establishment of business incubation services, common manufacturing facility, reverse engineering and prototyping centres, TTOs, technology extension services and community processing centres	At least 20 new Technology Transfer Infrastructures developed four per year						Four Partner States	800,000

Objective 5: Strengthen Management of Intellectual Property rights	Develop guidelines for establishing spinoff companies	A generic guideline developed for adoption by partner states						EASTECO	50,000
	Develop and implement IP awareness and outreach plans framework for subsiding the cost of usage on innovation hubs	A regional IP awareness and outreach plan developed for adoption by the partner states						EASTECO	50,000
	Creation of centres of excellence in IP training and Education	At least four centers of excellence in IP training and education established						EASTECO and Four Universities	200,000
	Review progress in the implementation of the regional IP policy.	A review report prepared and shared with the key stakeholders						EASTECO	10,000
	Support the establishment of standalone IP offices	At least 2 countries supported to establish a standalone IP office						EASTECO and two partner states	100,000
	Support the development of IP implementation plans	At least 20 universities and research organizations with IP policies develop policy implementation plans						EASTECO and 20 universities	200,000
	Establish IP fund	A generic guidelines for IP fund developed						EASTECO	50,000
Objective 6: Develop skills and talents required for innovation and technology transfer	Develop online training modules for start-ups, managers of innovation hubs and TTO managers	At least five programs developed and delivered						EASTECO	100,000
	Promote mentorship and peer to peer learning	At least five mentorship and peer to per learning events organized						EASTECO	50000
	Establish innovation expert platform	One regional innovation expert platform established						EASTECO	50,000
	Document success stories and best practices on innovation and technology transfer	A regional platform for success stories and best practices established						EASTECO	50,000

Objective 7: Enhance access to funding for innovation and technology transfer	Develop and implement a standalone innovation fund	At least three countries develop innovation fund						EASTECO and three partner states	100,000
	Restructure existing STI funding to cater for innovation and technology transfer	At least three existing STI funds restructured						EASTECO and three partner states	80,000
	Develop de-risking mechanism for funding start-ups	De-risking mechanism for funding start-ups developed in at least two countries						EASTECO and two partner states	60,000
	Develop national and regional platforms on existing funding opportunities	At least 1 regional platform and three national platforms developed						EASTECO and three partner states	100,000
	Restructure existing youth and women funds to cater for innovation and technology transfer	Restructuring of youth and women funds undertaken in at least 3 countries						EASTECO and three partner states	100,000
	Develop a framework to enable people in the diaspora to invest in local start-ups	A generic framework developed for adoption by the Partner states						EASTECO	50,000
Objective 8: Strengthen Collaboration, Linkages and Partnerships for knowledge creation and Technology Transfer	Develop incentive framework to support research-industry collaboration on innovation and technology transfer;	A framework that provides incentives for research-industry collaborations						EASTECO	30,000
	Develop incentive framework to support linkage of start-ups and SMEs with companies through sub-contracting;	A framework that provides incentives for Start-ups & SME-industry linkages						EASTECO and the Partner States	50,000
	Develop guidelines for coordination of start-ups and innovation hubs;	A guide for startup & innovation hubs coordination						EASTECO and Partner States	30,000
	Establish a regional network of technology transfer managers	A network of TT managers						EASTECO	20,000
	Establish a regional network of innovation hubs;	A network of innovation hubs						EASTECO	20,000
	Establish a regional network of innovators and start-ups;	A network of innovators & start-ups						EASTECO	30,000
	Organise annual forums for information exchange and peer-to-peer learning for start-ups, managers of innovation hubs and technology transfer managers;	Informed network of star-ups, managers, innovation hubs and TT managers.						EASTECO and Partner States	100,000
	Develop and implement frameworks for collaborations amongst actors of the innovation ecosystem	A framework for collaborations between the actors in innovation ecosystem						EASTECO and Partner States	20,000

Objective 9: Strengthen the provision of innovation and technology transfer information services	Develop and implement a plan to promote the expansion and use of patent information system for research, innovation and technology transfer activities	At least 20 more TISC established in universities and research organizations in the region						EASTECO and Universities	100,000
	Develop and implement a plan to enhance the provision of technology and innovation extension services at regional, national and sub-national levels	An implementation plan						EASTECO	50,000
	Support the development of industrial information strategies at regional and national level	A generic industrial information strategy developed for adoption by Partner States						EASTECO	50,000
	Develop a digital map of existing innovation hubs in each partner states and promote for access by innovators and start-ups	At least three national digital maps of existing innovation hubs developed						EASTECO and three partner states	60,000
Objective 10: Strengthen the development and deployment of emerging technologies	Review existing policies and develop new policies on emerging technologies	Policies and strategies on emerging technologies developed in at least three countries						EASTECO and three partner states	100,000
	Develop and implement a program for talent cultivation on emerging technologies	At least three countries supported to develop the plans						EASTECO and three Partner states	80,000
	Develop and implement plans to strengthen research in emerging technologies at regional and local levels	One plan developed at regional level and at least 3 plans developed at national levels						EASTECO and three Partner states	100,000
	Promote cross-countries research projects on emerging technologies	At least five collaborative research projects supported						EASTECO and all the Partner states	200,000
	Develop a strategy on how to enhance access to data by local researchers on emerging technologies	One regional strategy on access to data by local researchers on emerging technologies developed and implemented						EASTECO	50,000
	Develop and implement programs to manage fears and perception of use of emerging technologies by various stakeholders	A generic program on fears and perceptions on emerging technologies developed						EASTECO	50,000

Objective 11: Strengthen the Industrial innovation building and support	Organize forums and venues for the private sector, technical colleges and universities, and research and development institutions collaborations	At least one forum organised per year at region level						EASTECO and Partner States	100,000
	Develop and implement a framework for supporting firms to become more competitive through industrial innovation	A framework developed and adopted. At least 6 support institutions						EASTECO and Partner States	50,000
	Develop and implement a plan to strengthen existing institutions to provide support for industrial innovation	A plan developed and the capacities of at least six support institutions strengthen						EASTECO and Partner States	150,000
	Develop an incentive structures to improve access to finance and technical assistance for SMEs and informal sector	An incentive structure is developed and adopted by Partner States						EASTECO and Partner States	30,000
	Create a rewarding system for the innovations/innovators.	A reward system developed						EASTECO and Partner States	40,000
	Develop and implement industrial innovation strategies	Industrial innovation strategies developed and adopted in Partner States						EASTECO and Partner States	50,000
		Total							5,552,5000

Annex 2: Monitoring Evaluation and Learning framework for this strategy

Activity	Indicators (KPIs)	Baseline	Target	Outcome	Data collection/ Source	Fre-quency	Responsible
Objective 1: Strengthen legal and policy framework for innovation and technology transfer							
Map, identify and review all old policies and legislations	Number of policies reviewed	At least 10	At least 5 policies reviewed	Policy framework for innovation and technology transfer in the region enhanced	STI/IP Agencies	Annual	EASTECO, Tanzania, Uganda, Burundi
Support the development of policy implementation plans	Number of policy implementation plans done	Only two exist	At least 6 policy implementation plans developed	Implementation of existing policies strengthen	STI/IP Agencies	Bi-annual	EASTECO and All Partner States
Support the completion and adoption of existing draft policies	Number of draft policies completed and adopted	More than 10 drafts exist	3 policy drafts completed, at least one per year	Policy framework for innovation and technology transfer in the region enhanced	STI/IP Agencies	Annual	EASTECO, Tanzania, Kenya
Support the development of national IP policies and strategy	Number of National IP policies developed	Only 2 EAC countries have IP policies	5 EAC countries have IP policies. At least one developed per year	Use of IP for innovation and technology transfer enhanced	STI/IP Agencies	Annual	EASTECO Burundi, Kenya and South Sudan
Support the development of innovation policies	Number of Innovation policies developed	Only one EAC has a draft.	At least 3 EAC countries have innovation policies.	More innovation activities stimulated	STI/IP Agencies	Annual	EASTECO EAC countries
Support the development of frameworks and guidelines for research-industry linkages, equipment sharing, subcontracting and coordination of innovation hubs	Number of Frameworks and guidelines developed	No EAC country has a framework	At least 5 frameworks and guidelines developed, one per year	Innovation and technology transfer enhanced	STI/IP Agencies	Annual	EASTECO All Member States
Objective 2: Strengthen Institutional framework for innovation and technology transfer							
Strengthen the capacities of the existing STI Agencies for innovation and TT	Capacity strengthening plans developed and implemented	No EAC country has a capacity strengthening plan for STI agencies	At least four capacity strengthening plans developed and implemented	Capacities of STI agencies on innovation and technology transfer enhanced.	STI/IP Agencies	Bi-annual	EASTECO NACOSTI, COSTECH, NCST Uganda, Rwanda, Burundi and South Sudan
Expand the mandates of existing STI Agencies to include innovation and technology transfer	Percentage of the functions of STI Agencies related to Innovation and technology transfer	Currently innovation and TT takes less than 15%	The mandates of five Agencies for innovation and TT increased to at least 30%	The mandates of the agencies to support innovation and technology transfer strengthen.	Partner States	Annual	EASTECO All the countries except Kenya

Develop a framework for coordination of the various agencies responsible for innovation and technology transfer	Number of countries with coordination frameworks	No EAC country has a coordination framework	Coordination framework developed in at least three countries	Coordination of agencies responsible for innovation and technology transfer improved.	Partner States	Annual	EASTECO and all the countries
Prepare and develop a plan for strengthening grassroot innovation and innovation in the informal sector	Percentage of registered innovations arising from grassroot and informal sectors against total	10%	30%	Grassroot innovation and innovation in the informal sector strengthen	Partner States	Annual	EASTECO and all the countries except Tanzania
Objective 3: Strengthen Innovation Support Structures for innovators and start-ups							
Develop a framework for subsiding the cost of usage on innovation hubs	Number of start-ups using innovation hubs	30%	50%	Access to innovation hubs by innovators and start-ups enhanced	Partner States	Annual	EASTECO Three member states
Develop a PPP framework to support building of innovation hubs.	Percentage of PPP supported hubs against total number of hubs	0%	20%	Participation of the private sector in investing in innovation hubs enhanced	Partner States	Annual	EASTECO Four member states
Develop and implement incentive structure for women involvement in innovation hubs	Percentage of women accessing innovation hubs	15%	40%	Participation of women in running innovation hubs as business enhanced	Partner States	Annual	EASTECO Five member states
Undertake studies on the economic impact of innovation hubs	Report on economic impact of innovation hubs	No EAC countries has undertaken such a study	Economic impact studies undertaken in at least 3 countries	More government investment in innovation hubs	Partner States	Annual	EASTECO Three member states
Undertake a mapping of innovation ecosystem at regional and national levels	Report on a regional and national innovation ecosystem	Currently no such study is not available	mapping of innovation ecosystem undertaken in at least three countries	More understanding of the regions innovation ecosystem by decision makers.	Partner States	Annual	EASTECO Three member states
Undertake a regional innovation surveys	Report on regional innovation surveys	Currently no such survey is not available	At least two regional surveys undertaken	More understanding of the regions innovation ecosystem by decision makers.	Partner States	Annual	EASTECO

Objective 4: Strengthen Innovation, Technology and Knowledge Transfer in universities and research organizations							
Develop guidelines for establishment and operating technology transfer offices	Draft guidelines for establishing and operating TTOs	No stand alone guideline is available	At least four countries develop and implement guidelines	More effective technology transfer offices	Partner States	Annual	EASTECO Four member states
Develop career progression guidelines for TTO managers	Draft career progression guidelines for TTO managers	Currently there is no such guidelines	At least a generic career progression guideline developed	Clear appointment and promotion criteria for TTO managers	Partner States	Bi-annual	EASTECO
Develop and implement training programs and certification framework for TTO managers	Online training programs and certification for TTO managers available	Currently there is no such training at regional level	At least four training modules developed for TTOs	Skills of TTO managers enhanced	Partner States	Annual	EASTECO
Review of promotion criteria for researchers	A report on promotion criteria for researcher that incorporate innovation and TT available	Currently there is no such promotion criteria	At least a generic promotion criterion for researchers developed for adoption by universities and research	Motivation of researchers to participation in innovation and technology transfer enhanced	Partner States	Bi-annual	EASTECO
Support the establishment of business incubation services, common manufacturing facility, reverse engineering and prototyping centres, TTOs, technology extension services and community processing centres	Percentage of universities and research organizations with Innovation support structures	Less than 20%	At least 50% of the universities and research organizations in the region have Technology Transfer Infrastructures developed four per year	Access to technology transfer infrastructure enhanced	Partner States	Bi-annual	Four Member States
Develop guidelines for establishing spinoff companies	Guidelines for spinoff companies developed	No university or research organization has a guideline on spinoff	At least 30% of the universities and research organizations have a guidelines on spinoffs	Establishing of spinoff companies by universities and research organizations enhanced	Partner States	Bi-annual	EASTECO
Objective 5: Strengthen Innovation and Technology Management and Protection							
Develop and implement IP awareness and outreach plans framework for subsiding the cost of usage on innovation hubs	A document on IP awareness plans	Currently there is no regional and national IP awareness and outreach plan	A regional IP awareness and outreach plan developed for adoption by the member states	Use of IP as a tool for innovation and technology transfer enhanced	Partner States	Bi-annual	EASTECO
Creation of centres of excellence in IP training and Education	Number of Centres of excellence on IP training and education	Currently there is no Centre excellence on IP training and education	At least four centers of excellence in IP training and education established	Access to IP training and education enhanced	Partner States	Annual	EASTECO and Four Universities

Review progress in the implementation of the regional IP policy.	Report on the implementation status of the regional IP policy	Currently there is no information this	A review report prepared and shared with the key stakeholders	Implementation of the existing IP policy strengthen	Partner States	Annual	EASTECO
Support the establishment of standalone IP offices	Established standalone IP offices	Currently there is only one stand alone IP office	At least 2 countries supported to establish a standalone IP office	Provision of IP services in those countries improved	Partner States	Annual	EASTECO and two member states
Support the development of IP implementation plans	Number of institutions supported to develop IP implementation plans	No university has an IP implementation plan.	At least 20 universities and research organizations with IP policies develop policy implementation plans	Implementation of existing IP policies improved	Partner States	Bi-annual	EASTECO and 20 universities
Establish IP fund	Number of countries with IP funds established	Currently no EAC country has an IP fund.	At least 2 EAC countries supported to establish an IP fund	More start-ups and innovation hubs are supported to protect their innovations	Partner States	Annual	EASTECO
Objective 6: Develop skills and talents required for Innovation and Technology Transfer							
Develop online training modules for start-ups, managers of innovation hubs and TTO managers	Online training modules developed	Currently there is no online training module at the regional level	At least five programs developed and delivered	Skills of the key actors of the innovation ecosystems enhanced	Partner States	Bi-annual	EASTECO
Promote mentorship and peer to peer learning	Number of mentorship & Peer-to peer events done	Currently there is no such event organized by EASTECO	At least five mentorship and peer to per learning events organized, one per year	Skills of the key actors of the innovation ecosystems enhanced	EASTECO	Bi-annual	EASTECO
Establish innovation expert platform	Regional Innovation and TT expert platform	Currently there is no such platform at regional and national level	One regional innovation expert platform established	Access to skills by key innovation actors enhanced	EASTECO and Partner States	Bi-annual	EASTECO
Document success stories and best practices on innovation and technology transfer	Regional Platform on success stories and best practices	Currently there are no platform on success stories at national and regional level	A regional platform for success stories and best practices established	Access to skills by key innovation actors enhanced	EASTECO and Partner States	Bi-annual	EASTECO
Objective 7: Strengthen access to funding for innovation and technology transfer							
Develop and implement a standalone innovation fund	Innovation fund developed and implemented	Currently no EAC State has an Innovation fund	At least three countries develop innovation fund	Access to funding for innovation and technology transfer increased	Existing and available funds for innovation support	Annual	EASTECO and three member states
Restructure existing STI funding to cater for innovation and technology transfer	Re-structured STI funding mechanisms catering for ITT	Less than 15% of STI funding target innovation and TT	At least three existing STI funds restructured to increase STI funding to innovation to 30%	More funds directed to innovation and technology transfer in the region	Existing STI funding structure	Annual	EASTECO and three member states

Develop de-risking mechanism for funding start-ups	De-risking mechanisms developed	Currently no current has a mechanism for de-risking start-ups	De-risking mechanism for funding start-ups developed in at least two countries	Access to funding by start-ups increased	Risks incurred/ anticipated in funding start-ups	Annual	EASTECO and two member states
Develop national and regional platforms on existing funding opportunities	Platform for national and regional existing funding opportunities	Currently there is no platform on existing funding opportunities	At least 1 regional platform and three national platforms developed	Access to funding by innovators, researchers and start-ups improved	Partner States	Bi-annual	EASTECO and three member states
Restructure existing youth and women funds to cater for innovation and technology transfer	Re-structured youth and women funds catering for ITT	None of the existing funding mechanisms support innovation and TT	Restructuring of youth and women funds undertaken in at least 3 countries	More funding from existing youth and women funds available for innovators and start-ups	Youth and women funding in existence	Bi-annual	EASTECO and three member states
Develop a framework to enable people in the diaspora to invest in local start-ups	Developed frameworks for investment in local start-ups by diaspora	None of the existing investment policies provides for diaspora investment in local start-ups	A generic framework developed for adoption by the member states	Capacity of member states to attract investment funding for start-ups from the diaspora improved	Partner States	Bi-annual	EASTECO
Objective 8: Strengthen Collaboration, Linkages and Partnerships for knowledge creation and Technology Transfer							
Develop incentive framework to support research-industry collaboration on knowledge creation and technology transfer;	No. of collaborations on ITT achieved	No framework exists	At least 5 collaborations	Enhanced research-industry collaboration on knowledge creation and technology transfer;	Partner States	Annual	EASTECO and Partner States
Develop incentive framework to support linkage of start-ups and SMEs with companies through sub-contracting;	A framework to support linkages achieved through sub-contracting	No framework exists	Frameworks developed in at least 3 Partner States	Enhanced linkage of start-ups and SMEs with companies through sub-contracting;	Partner States	Annual	EASTECO and Partner States
Develop guidelines for coordination of start-ups and innovation hubs;	Coordination guidelines of start-ups and innovation hubs	One draft exists	Guidelines developed in at least 4 Partner States	Increased coordination of start-ups and innovation hubs;	Partner States	Annual	EASTECO and Partner States
Establish a regional network of technology transfer managers	TT networks established	None exist	Regional network established	Collaboration and learning amongst TT Managers enhanced	Partner States	Annual	EASTECO and Partner States
Establish a regional network of innovation hubs;	Regional networks of innovation hubs established	None exist	Regional network established	Collaboration and learning amongst Managers of innovation hubs enhanced	Partner States	Annual	EASTECO and Partner States
Establish a regional network of innovators and start-ups;	Regional networks of innovation start-ups established	None exist	Regional network established	Collaboration and learning amongst Managers of startups s enhanced	Partner States	Annual	EASTECO and Partner States

Organise annual forums for information exchange and peer-to-peer learning for start-ups, managers of innovation hubs and technology transfer managers;	No. of annual forums organized	None exist	At least 1 annually	Increased information exchange and peer-to-peer learning for start-ups, managers of innovation hubs and technology transfer managers;	Partner States	Annual	EASTECO and Partner States
Develop and implement frameworks for collaborations amongst actors of the innovation ecosystem	No. of frameworks developed and implemented	None exist	Framework developed	Collaboration and learning amongst actors of the innovation ecosystem enhanced	Partner States	Annual	
Objective 9: Enhance access to information services on innovation and technology transfer							
Expand utilization of patent innovation system	Number of TISCs established in universities	Currently less than 10% of the universities and research organizations have TISCs	At least 20% universities and research organizations have TISCs	Use of existing technologies and patents for innovation increased	WIPO, IP Agencies	Annual	EASTECO and Universities
Develop industrial information strategies	Industrial information strategy developed	Currently no EAC country has industrial information strategy.	At least three EAC countries have industrial information strategies	Access to information for innovation and technology transfer improved	Partner States	Annual	EASTECO
Develop a digital map of existing innovation hubs in each member states	Digital maps developed	Currently no EAC State has a digital map of existing innovations	At least three national digital maps of existing innovation hubs developed	Access to innovation hubs by innovators, researchers and start-ups improved	Innovations in existence	Bi-annual	EASTECO and three member states
Objective 10: Strengthen the development and deployment of emerging technologies							
Review existing policies and develop new policies on emerging technologies	Report on existing polices and emerging technologies policies developed	Most existing policies on emerging technologies are in draft forms	Policies and strategies on emerging technologies developed in at least three countries	Policy framework on emerging technologies improved	Partner States	Bi-annual	EASTECO and three member states
Develop and implement a program for talent cultivation on emerging technologies	Programs developed and implemented on emerging technologies	Only one EAC country has a strategy on talent cultivation on the emerging technologies	At least three countries supported to develop the plans	Skills and talents for emerging technologies strengthen	Partner States	Bi-annual	EASTECO and three member states
Develop and implement plans to strengthen research in emerging technologies at regional and local levels	Plans for strengthening research on emerging technologies	Currently there is no such plan at regional and national levels	One plan developed at regional level and at least 3 plans developed at national levels	Research and development in emerging technologies in the region increased	Partner States	Bi-annual	EASTECO and three member states
Promote cross-countries research projects on emerging technologies	Number of collaborative research projects on emerging technologies	No data	At least five collaborative research projects supported	Enhanced collaboration in research in emerging technologies in the region	EASTECO Partner States	Bi-annual	EASTECO and all the member states

Develop a strategy on how to enhance access to data by local researchers on emerging technologies	A strategy on enhancing access to information by local researchers on emerging technologies	Currently there is no such strategy	One regional strategy on access to data by local researchers on emerging technologies developed and implemented	Access to data for research on emerging technologies enhanced	Needs assessment for data needs by local researchers on emerging technologies	Bi-annual	EASTECO
Develop and implement programs to manage fears and perception of use of emerging technologies by various stakeholders	Programs to manage fears and perception of use of emerging technologies developed	Currently there are no such programs	A generic program on fears and perceptions on emerging technologies developed	Reduced fears of and negative perceptions on emerging technologies	Existing fears and perceptions on emerging technologies	Bi-annual	EASTECO
Objective 11: Strengthen the Industrial innovation building and support							
Organise forums and venues for the private sector, technical colleges and universities, and research and development institutions collaborations	No. of forums for interaction between all the parties	None exist	At least 1 annually	Increased information exchange and peer-to-peer learning amongst the listed stakeholders	Partner States	Annual	EASTECO
Develop and implement a framework for supporting firms to become more competitive through industrial innovation	A framework	None exist	A framework developed and adopted and at least 6 support institutions	Capacity of institutions to support industrial innovation enhanced	Key support institutions in Partner States	Annual	EASTECO
Develop and implement a plan to strengthen existing institutions to provide support for industrial innovation	A plan	None exists	A plan developed and implemented	the capacities of at least six support institutions to industrial innovation strengthen	Key support institutions in Partner States	Annual	EASTECO
Improve access to finance and technical assistance for SMEs in the informal sector	Number of SMEs assisted and have access to finance	none	100 per year	Capacities of SMEs in the informal sector to access finance is enhanced		Annual	EASTECO

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