

## 4<sup>TH</sup> KIPPRA ANNUAL REGIONAL CONFERENCE



AFRICAN ECONOMIC RESEARCH CONSORTIUM  
Consortium pour la Recherche Economique en Afrique



## SCIENCE, TECHNOLOGY, AND INNOVATION (ST&I) IN ENHANCING DELIVERY OF THE "BIG FOUR" DEVELOPMENT AGENDA

### COMMUNIQUE

23<sup>rd</sup> - 25<sup>th</sup> JUNE 2021, BOMAS OF KENYA, NAIROBI

## Preamble

The KIPPRA Annual Regional Conference (KARC) was successfully held from 23<sup>rd</sup> to 25<sup>th</sup> June 2021 at the Bomas of Kenya, with the theme: **“Science, Technology, and Innovation (ST&I) in Enhancing Delivery of the ‘Big Four’ Development Agenda”**.

We express our gratitude and appreciation to all the partners who supported KIPPRA in organizing a successful conference. We acknowledge the importance of intensifying application of ST&I to raise productivity and efficiency levels across the social, economic, and political pillars as envisioned in the Kenya Vision 2030. The Constitution of Kenya 2010 explicitly places a premium on development and management of a knowledge-based economy.

The conference covered a wide spectrum of policy issues, including: Status of ST&I in Kenya; Policy, institutional and legislative framework; Development of human capital; Building a strong innovation system; ST&I infrastructure; Building resilience through ST&I; and Cross cutting issues including gender, youth and PWDs.

This Communique brings out the key messages in harnessing ST&I for the achievement of the “Big Four” agenda, and global and regional normative frameworks, including the East African Community Vision 2050 and the African Union Agenda 2063 that calls for advancement in ST&I.

The conference resolutions provide an opportunity to researchers, policy makers, and actors in both public and private sectors to continue the dialogue in bridging the identified gaps to drive science, technology, and innovation for sustainable development.

## Conference Objectives and Expected Outcomes

The broad objective of the conference was to provide a forum for policy makers, implementers, data producers and data users to discuss the use of ST&I in enhancing delivery of the 'Big Four' development agenda. Specifically, the objectives of the conference were to: examine the human resource development relevant for ST&I in Kenya; assess the infrastructure and related policies to support ST&I in Kenya; evaluate the innovation system in Kenya; investigate the institutional system and economic incentives to promote ST&I in Kenya and determine the role of ST&I in building resilience in economic crises in Kenya.

The following were the expected outcomes from the conference:

- (i) Enhanced knowledge sharing on the status of ST&I and future area of action;
- (ii) Learnt lessons from good practices across the national and county governments and at regional and global level;
- (iii) Strengthened networking and partnerships with relevant stakeholders; and
- (iv) Communique on harnessing ST&I in the achievement of the "Big Four" agenda and global commitments.

## Participants

The conference was attended on daily basis by over 400 participants. The participants were drawn from key stakeholders including Government ministries, local and international universities, state corporations, Non-Governmental Organizations (NGOs), embassies, research institutions, county governments, civil society, private sector, banking sector insurance companies, and the public.

## Conference Themes

### **Theme 1: Status of ST&I in Kenya**

Scientific research generates new ideas that build knowledge on development of new products and services. These ideas drive innovation, which contributes positively to economic activity through creation of new markets, diversification of goods and services, creation of job opportunities, and advancing methods of production. Kenya is a leading technology and innovation hub in Africa; it has witnessed investment in large-scale telecommunications infrastructure that supports efficient and affordable info-communications services.

Regarding the status of ST&I in Kenya, we note that:

- 1) There is need to increase uptake of Science, Technology, Engineering and Mathematics (STEM) courses. This can be achieved through provision of career guidance and mentorship to students in early years of learning, training of more personnel on STEM courses, and re-tooling to secure and advance the skills. This helps to build a strong skill base necessary to steer a knowledge-based economy.
- 2) There are several institutions carrying out ST&I activities. Development of a framework to track spending in ST&I activities is crucial to ensure the funding for ST&I meets the provisions of the STI Act 2013 (Rev. 2014) section 32(2)(a). Further, the Government could consider enhancing budgetary allocation for seed capital to support Research and Development (R&D).
- 3) FinTech has placed Kenya among the largest fintech ecosystems in Africa and in the world. To foster growth of the fintech ecosystem, there is need to strengthen the policy and regulatory framework in providing a conducive environment that supports emerging fintechs. In addition, the Government could encourage start-ups in the fintech ecosystem by offering tax incentives and helping secure funding for

fintech innovations among micro, small and medium enterprises (MSMEs).

- 4) E-commerce has the potential to reduce business costs, enhance business visibility and facilitate access to wider markets. To realise more gains from the platform, there is need to strengthen the Internet infrastructure across the counties as a priority. In addition, the private sector could take lead in creating digital solutions to scale up new business models, develop new ways of delivering services, and increase the competitiveness of local markets.

**Action:** *The National Treasury; Ministry of ICT, Innovation and Youth; Central Bank of Kenya; National Research Fund; Parliament; Communication Authority of Kenya; and Kenya Bankers Association*

## **Theme 2: Policy, Institutional and Legislative Framework**

The important role played by ST&I in achieving the development goals for world economies is widely acknowledged. In Kenya, the Vision 2030 has identified ST&I as a foundation for economic development. The ST&I Act of 2013 is the overarching legal framework. The ST&I sector is regulated under various regulatory frameworks, which have established various institutions mandated to carry out the relevant functions.

In strengthening policy, institutional and legislative framework in Kenya we note that:

- 5) Fast-tracking the enactment of the ST&I policy will create ST&I capacities that are appropriate to the needs, priorities and resources of the country, and nurture a local science, technology and innovation culture.
- 6) Having an appropriate policy and legislative framework will establish and strengthen national and regional innovation systems. It will also enable commercialization of affordable technologies through the support of innovation hubs, incubation centres in universities, and technology transfer centres.

- 7) Having an appropriate policy, institutional and legislative framework will facilitate technical and managerial skilling up, modernisation of worksites and provision of modern machinery and equipment to the MSEs sector.
- 8) Enhanced coordination and mainstreaming of ST&I activities serves to address the fragmented investments in ST&I and creating links between stakeholders for knowledge sharing, technology transfer, testing, certification, and quality improvements.
- 9) Innovation and use of technology are driven by business and private investors. Investments in R&D are high risk and investors need government guarantee as a leverage to inject their funds in ST&I development and commercialisation of innovations. Therefore, it is incumbent upon the government to provide fiscal and policy incentives to attract private sector investments in R&D and adopt technology use.

**Action:** NACOSTI; Ministry of ICT, Innovation and Youth; Kenya National Innovation Agency; County Governments; private sector, and non-state actors

### **Theme 3: Development of Human Capital**

Education and research are key determinants of the ability to create a knowledge-based economy. The knowledge-intensive nature of science and technology requires highly qualified and skilled human resources. Over the years, the number of arts and social science-based courses offered at the tertiary level has grown while courses in Science, Technology, Engineering, and Mathematics (STEM) have not. At the secondary and primary school levels, it is envisioned that the Competency-Based Curriculum will play a role in fostering creativity and interest in science and mathematics.

To enhance development of human capital in Kenya, we note that:

- 10) The education system needs to respond to the dynamic technology needs by integrating artificial intelligence, genetic engineering, Internet of Things (IoT) and blockchain in its curriculum. Further, the system should respond to the needs of the 4th industrial revolution, with a decentralized system of delivery that responds to individual skill requirements.
- 11) Strengthening linkages between the universities and industries is necessary to support growth in innovation and its commercialization. The Government could support learning institutions in establishing science parks, innovation hubs and clusters.
- 12) Integrating the “Jua Kali Sector” in the formal assessment and certification system in the qualifications framework should be embraced. In addition, there is need for mechanisms to reimburse employers who support skills upgrading programmes for their employees.

**Action:** *Ministry of Education; Ministry of ICT, Innovation and Youth; universities and research institutions; private sector; County Governments; and non-state-actors*

#### **Theme 4: Building a Strong Innovation System**

Building a strong innovation system supports the creation of innovative ideas, incubation of ideas, protection of breakthrough innovations against competition, and facilitation of demand for innovative products and services. The innovation systems in the country require strong linkages among ST&I actors, innovative financing strategies and goodwill from the Government.

In building a strong innovation system in Kenya, we note that:

- 13) Universities, private firms, the national and county governments, and development partners need to collaborate in sharing ideas on innovations, incubating innovation ideas, and providing seed capital and mentorship. Similarly, ST&I actors should collaborate in adopting

new approaches and digital technologies to promote ST&I in the country.

- 14) The National and County governments, private sector, academia, and development partners need to increase budgetary allocations towards research and development to facilitate scientific, technological, and innovative breakthroughs. This can be supported by holistic implementation of the existing relevant policies and laws on ST&I.
- 15) In addition, National and County Governments are encouraged to establish an Innovation Fund that identifies promising innovations to incubate, nurture, and support commercialization. Further, commercial banks could come up with funding strategies that identify viability of innovations for financial support.
- 16) Further, the National and County governments in collaboration with the private sector, academia, and the development community could come up with targeted measures to identify ST&I innovations by persons living with disabilities (PWDs) for support through funding, incubation, mentorship, and introduction to the market for commercialization.
- 17) Sealing the loopholes in the existing Intellectual Property Rights (IPRs) regime, and holistically implementing existing IPR policies and laws serve to incentivize investments in ST&I.

**Action:** NACOSTI, Ministry of ICT, Innovation and Youth; Kenya National Innovation Agency; universities and research institutions; Kenya Industrial Property Institute; County Governments; National Council for Persons with Disabilities (NCPWD); development partners; media houses and non-state actors

## **Theme 5: ST&I Infrastructure**

Growth and development of ST&I requires a new set of infrastructure that includes digital connectivity, broadband communication networks, and smart renewable energy grids. It also requires stronger infrastructure



networks to support cooperation in research, knowledge generation, technology transfer, innovation diffusion, human resource development, and raising public awareness on science and technology.

To build a strong innovation system in Kenya we note that:

- 18) There is need for the National and County Governments to enact policies that entrench cybersecurity in Government operations, improve resilience against cyber-attacks through incident response plans, enhance capacity building in cybersecurity, provide sufficient resources, and increase collaboration with industry stakeholders.
- 19) To mainstream development of accessible and inclusive digital innovations in public policy, the Government could provide tax incentives and incorporate Internet of Things and Artificial Intelligence in various activities and industries.
- 20) Developing ST&I infrastructure that accommodates persons with disabilities through adoption of inclusive design in policy formulation and implementation will go a long way in disability mainstreaming.
- 21) Enhanced collaborations between the Government and the private sector through Public-Private Partnerships (PPPs) is necessary to improve the utilization of existing infrastructure and in building new ST&I infrastructure.

**Action:** Ministry of ICT, Innovation and Youth; National Council for Persons with Disabilities (NCPWD); National Government; County Governments; private sector; development partners; and non-state actors

## **Theme 6: Building Resilience through ST&I**

For Kenya to manage disasters effectively and efficiently, the preparedness and response of the public sector is vital.

In strengthening disaster management in Kenya, we note that:

- 22) Disaster management in Kenya is already using ST&I, including the development of early warning systems in floods, and earthquakes.

However, there is need to improve the existing disaster management systems to strengthen detection.

- 23) Disaster management entities in Kenya tend to operate in silos. In this regard, strengthening collaborative efforts among relevant implementing agencies is a priority.
- 24) To enhance efficiency in disaster risk preparedness, funding, response, and community level awareness, an appropriate policy framework is required to guide not only disaster risk management but also management of disasters.

**Action:** *National Government; National Disaster Management; County Governments; private sector; development partners; and non-state actors*

### **Agriculture**

With climate change disrupting farming plans and cropping calendar, adoption of affordable climate smart agriculture technology strategies aimed at increasing productivity, improving resilience, and mitigating climate change is required to enhance productivity.

Regarding agriculture and ST&I in Kenya, we note that:

- 25) Application of ST&I in the agriculture sector offers solutions in improving food safety, including biotechnologies. To increase the uptake of modern technology, there is need to implement proactive policies and safety regulations, legislation, and institutions; build capacity in scientific methods; protect and encourage private investments; create public awareness and acceptance; and provide adequate resources and strengthen partnerships.
- 26) With the use of ST&I, youth have the potential to contribute in achieving food security. This can be done by having programmes that build capacities at all levels of education, and the enactment of the Mechanization Bill to enhance mechanization in the agriculture sector

**Action:** *State Department for Crop Development and Agricultural Research; County Governments; private sector; development partners; and non-state actors*

## **Health**

Healthcare relies heavily on technological development. This has been evident during the emergence of the COVID-19 pandemic where ST&I has been heavily applied especially through use of simple technological innovations .

To improve delivery of health care service in Kenya we note that:

- 27) The rate of return on health care interventions is significant, where every Kenya shilling invested in health care brings about ten Kenya shillings in the economy. As such, there is need to prioritize deliberate investments to strengthen ICT in delivery of health care services across all the 47 counties.

*Action: Ministry of Health; Kenya Medical Research Institute; universities and research institutions; County Governments; private sector; development partners; and non-state actors*

## **Blue economy**

The Blue economy is crucial to Kenya since it drives strategic focus on national ocean resources for economic development.

In exploiting opportunities in the blue economy in Kenya, we note that:

- 28) Intensifying the application of ST&I will help in exploiting the potential and opportunities in the blue economy sector, including the high-end cruise ship tourism, aquaculture, sport fishing, deep sea mining, wind energy, and boat building.
  
- 29) ST&I offers opportunities to enhance capacity to monitor activities in the deep waters, which facilitates to effectively respond to the challenges and threats of piracy and illegal fishing.

*Action: State Department for Fisheries, Aquaculture and Blue economy; County Governments; private sector; and non-state actors*

## **Housing**

With an annual deficit on housing in Kenya estimated at almost 200,000 units, significant effort is required to meet housing demands.

Regarding affordable housing in Kenya, we note that:

- 30) Incorporation of ST&I in the construction process can lower the production costs, including by adopting appropriate building technologies, coming up with innovative housing solutions, and developing environmentally friendly building codes to support development of affordable housing.
- 31) Developing a comprehensive policy framework for e-waste management will create a conducive environment for affordable housing.

*Action: State Department for Housing and Urban Development; County Governments; Ministry of ICT, Innovation and Youth; private sector; and other non-state actors*

### ***Industrialization***

The 4<sup>th</sup> industrial revolution is here with us and we need to reap maximum benefit for the economy.

In strengthening industrialization in Kenya, we note that:

- 32) Integrating technologies related to the 4<sup>th</sup> industrial revolution such as Artificial Intelligence, blockchain, cryptocurrency and Internet of Things in the curriculum at both elementary, higher education and capacity building among the professionals will facilitate in embracing all the emerging opportunities with the 4<sup>th</sup> Industrial Revolution.
- 33) Having a clear legislative framework in place will guide the implementation of the 4<sup>th</sup> Industrial Revolution. Further, there is need to invest in big data platforms, reliable energy, and Internet connectivity in providing adequate capacity. Good governance also plays a key role in implementing the agenda.
- 34) Supporting MSMEs to uptake ST&I will facilitate them in addressing various challenges faced. This can be achieved through skills and technology transfer, provision of incentives to encourage innovation, and strengthening partnerships working with MSMEs.

- 35) Space technology is key in supporting all the pillars of the “Big Four” agenda and the long-term development blueprint. There is therefore need to strengthen the linkages between Government, industry and academia and the private sector in promoting space technology.

*Action: State Department for Industrialization; Micro and Small Enterprises Authority; Kenya Space Agency; Ministry of ICT, Innovation and Youth; County Governments, and non-state actors*

## **Theme 7: Cross Cutting Issues**

The growth and development of ST&I faces various cross cutting issues given the economic, social, demographic, societal and technological changes. Some of the cross-cutting issues include gender disparities, limited inclusion of people living with disability, and poor participation by youth in the ST&I activities.

Regarding the cross cutting issues in the ST&I in Kenya, we note that:

- 36) There is limited and fragmented data on ST&I. Various institutions collect data for their own use. There is, therefore, need to review the policy and legal framework to ensure all ST&I data is centrally collected and consolidated.
- 37) Mainstreaming a gender perspective in ST&I will: address gender disparities in access to resources and opportunities; recognize the abilities and innovative capacities at the grassroots level; and build capacities to access, create and implement solutions for ST&I. By engaging girls and women in ST&I, evidence shows the whole society stands to benefit from implementing solutions in life problems.
- 38) Skills mismatch is among the key issues facing the youth in their participation in the labour market. Thus, providing incentives such as direct technical assistance and training to enable the youth to engage in business and other growth-oriented economic activities becomes a priority in empowering the youth. This includes prioritizing TVET programmes that offer graduates with opportunities for practical

learning, and continuously equipping them with appropriate infrastructure and skilled trainers.

- 39) Technological innovations are necessary to empower PWDs, thus enabling them to function more effectively in the society. As such, investing in education for PWDs at all levels will help in adequately equipping them to participate effectively in ST&I activities.

*Action: Ministry of ICT, Innovation and Youth; Ministry of Public Service and Gender; County Governments; private sector; development partners; and non-state actors*

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## *Moving Forward*

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The Kenya Institute for Public Policy Research and Analysis (KIPPRA) commits to ensure that these issues raised are communicated with the relevant agencies identified in this communique. The Institute also commits to follow up on the actions proposed during the conference and report on progress made towards implementation of the resolutions.

*Action: KIPPRA*

***Thank you all.***

***Communiqué Presented on 25<sup>th</sup> June 2021 via Hybrid PPLA Conference Platform.***

Signed by: .....  
  
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Signed by: .....  
  
**Mr. Koitamet Olekina**  
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