African Union
Scientific Technical and
Research Commission

African Economy Driven by Innovation

Policy Analysis on Science, Technology and Innovation Strategy for Africa-2024 (STISA-2024)

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African Economy Driven by Innovation

Policy Analysis
on
Science, Technology and Innovation
Strategy for Africa-2024
(STISA-2024)

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This study was commissioned by the African Union Scientific, Technical and Research Commission and it reflects the views and opinions expressed therein, which are not necessary those of the AU and its Commission. This study was developed with the aim to improve and strengthen science, technology and innovation capacities at the national, regional and continental levels through building and upgrading research infrastructures, enhancing professional and technical competencies, promoting innovation and entrepreneurship development and creating an enabling environment for STI and ultimately to assist Member States and RECs to adopt /domesticate STISA-2024.

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Overview

The Science, Technology and Innovation Strategy for Africa (STISA-2024) is part of the formulation of the Agenda 2063 of the African Union. Running under the mission "Accelerate Africa's transition to an innovation led knowledge based economy", STISA-2024 places emphasis on the impact of science, technology and innovation in driving Africa's economic sustenance and competitiveness across all the domains, including agriculture, health, energy, security, environment, etc., to produce African STIs output.

It may be recalled that the AU Science, Technology and Innovation Strategy for Africa (STISA-2024) was endorsed as a continental framework for accelerating Africa's transition to an innovation-led and knowledge-based economy by the AU Head of States and Governments in Malabo, Equatorial Guinea in June 2014 (Assembly/AU/ /Dec.520 (XXIII)). The STISA-2024 was designed based on recognizing the cross cutting nature of Science, Technology and Innovation (STI) to all other AU priority development policies and agendas including the AU Agenda 2063.

Towards the end of 2014, the STRC engaged in the development of a policy analysis for the STISA-2024 to ensure its smooth implementation. The analysis was developed within the considerations of STIs for economic development in Africa. Against this backdrop, the STISA-2024 was subjected to critical analysis considering present, past and future based on the needs and gaps that yielded all the pre-requisite and required systems and mechanisms including policies and institutions needed were identified. The analysis was made to ensure that Member States and RECs are informed on the systems needed for the domestication and implementation of the strategy.

The output of the study is organised in two parts. **Part 1, Identifying Policies and Institutions for the STISA-2024 Implementation**, where the pillars of STISA were analysed using the Finite Element Analysis and the Problem Tree Methodology to identify the policy gaps and institutional arrangements that may or may not exist in the majority of our Member States and/or RECs.

Part 2, Defining Policies and Institutions for the STISA-2024 Implementation, clarifies on the possible predefined 13 policies and 7 institutions needed for the STISA-2024 implementation, and also provides a guideline and common understanding and approach to AUC and its Specialized Institutions, Member States, RECs and Partners.

Generally, the authors are of the view that this analysis will help Member States to build robust systems and mechanisms that will respond to STI challenges and attend to the STISA-2024 mission. This report is to be used as a tool for better dialogue on the intra-Africa STI level and with other concerned stakeholders and partners.

It is to be noted that, this report is not a sacrosanct as it may be subject for further discussion and improvement by other experts and colleagues at the national and continental levels. It was developed with the ultimate goal to garner support and buy-in of all relevant stakeholders. The policies and institutions, which are identified herein, are designed to link with the aims, objectives, and the expected results of the STISA-2024.

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List of Abbreviations

AAS	African Academy of Sciences
AAU	Association of African Universities
ACBF	African Capacity Building Foundation
AfDB	African Development Bank
AJA	African Journalist Association
AOSTI	African Observatory for Science, Technology and Innovation
ASRIC	African Science, Research and Innovation Council
ATPs	African Technology Policy Studies Network
AU	African Union
AUC	African Union Commission
AUNS	African Union Network of Sciences
AUTO	African Union Trade Office
CPA	Africa's S&T Consolidated Plan of Action
CPDEE	Centre for Development and Promotion of Entrepreneurship and Enterprise
DEA	Department of Economic Affairs of the AUC
DIE	Department of Infrastructure and Energy
DREA	Department of Rural Economy and Agriculture
DSA	Department of Social Affairs of the AUC
DTI	Department of Trade and Industry of the AUC
ECOSOC	Economic and Social Council
GI	Geographical Indications
HR	Human Resource
HRST	Department of Human Resource, Science and Technology
ICT	Information Communication Technology
IEA	International Energy Agency
ILO	International Labor Organization
IP	Intellectual Property
IPCC	Inter-Governmental Panel on Climate Change
ITU	International Trade Union
MS	Member States
NEPAD	New Partnership for Africa's Development

NPCA	NEPAD Planning and Coordination Agency
OECD	Organization for Economic Co-operation and Development
OTA	Organization of African Trade
OTTA	Office for Technology Transfer and Acquisition
PAIPO	Pan African Intellectual Property Organization
PAU	Pan-African University
R&D	Research and Development
REC	Regional Economic Community
S&T	Science and Technology
SME	Small and Medium Enterprise
STI	Science, Technology and Innovation
STISA	Science, Technology and Innovation Strategy for Africa
STRC	Scientific, Technical and Research Commission
TVET	Technical Vocational Education and Training
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UNU	United Nations University
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

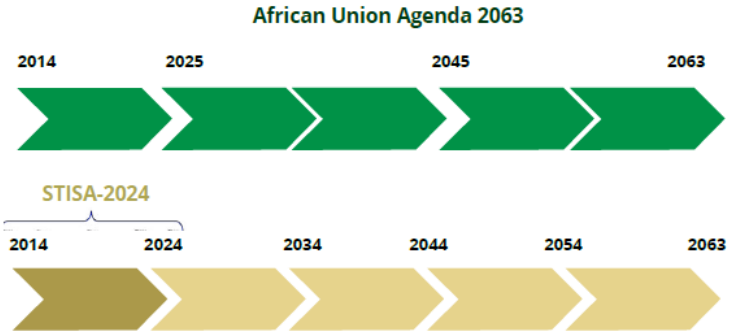
Part 1

Identifying Policies and Institutions for STISA-2024 Implementation

I Introduction

The Assembly of the AU Head of States and Government adopted in its Twenty-Third Ordinary Session the Science, Technology and Innovation Strategy for Africa -2024 (STISA-2024) as continental framework for accelerating Africa's transition to an innovation-led, knowledge-based economy within the overall framework of the AU Agenda 2063, Malabo Equatorial Guinea, June 2014 (Assembly/AU/ /Dec.520(XXIII)).

The AU Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024)[1] is the 1st decade incremental strategy that is designed to address Africa's challenges within the context of the AU Agenda 2063 with the ultimate goal of contributing significantly to the AU vision **"An integrated, prosperous and peaceful Africa driven and managed by its own citizens and representing a dynamic force in the international arena"**.

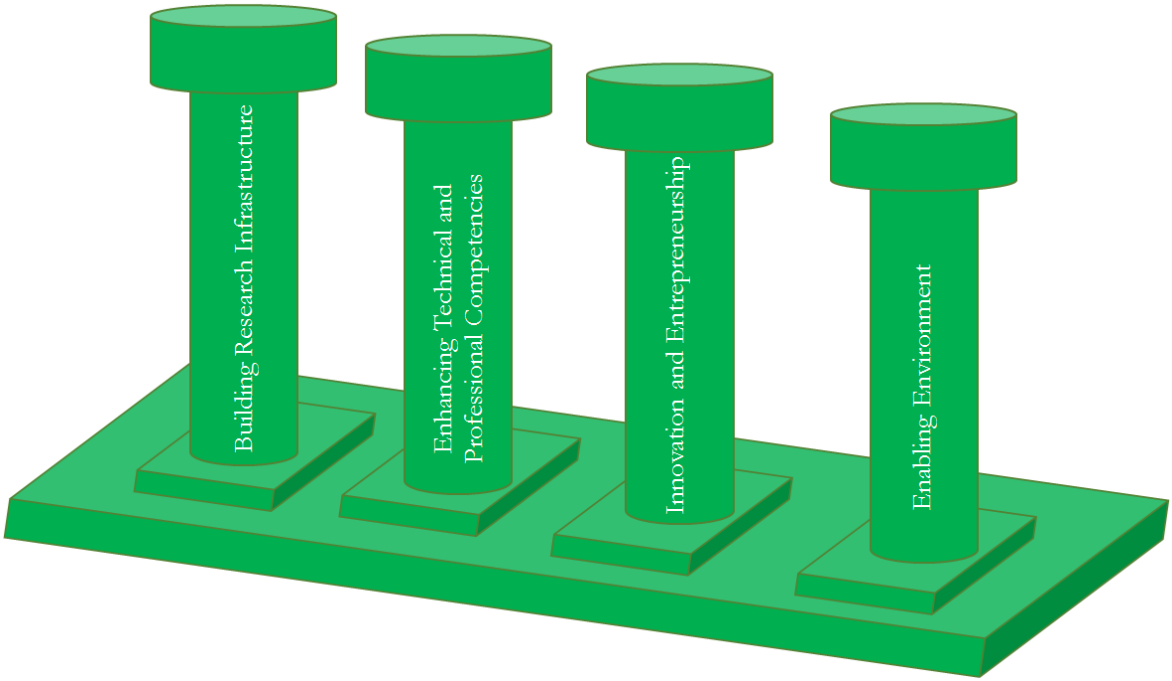


Timing of the STI Strategy within the Agenda 2063

Unlike its predecessor the Africa's Science and Technology Consolidated Plan of Action, STISA-2024 places science, technology and innovation at the epicenter of Africa's socio- economic development and growth, where it was designed to meet the knowledge, technology and innovation demands of the various AU's economic and social sectoral development frameworks and policies.

[1] The Strategy could be accessed on the following link http://hrst.au.int/en/content/science-technology-and-innovation-strategy-for-africa-2024

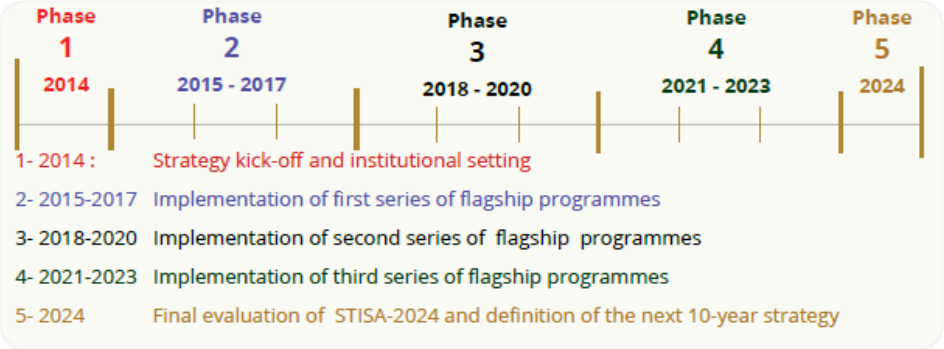
On the development of STISA-2024, four prerequisite pillars were defined to ensure the achievement of its mission **"Accelerate Africa's transition to an innovation-led, Knowledge-based Economy"** and the realization of its goals and objectives. These pillars are **Upgrading/Building Research Infrastructure**; **Enhancing Technical and Professional Competencies**; **Innovation and Entrepreneurship**; and **Providing an Enabling Environment for STI Development in the African Continent**.



Pillars of the AU Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024)

Using finite element analysis and problem tree methodology, the AU/STRC analysed each of the STISA pillars and identified the needed foundation (sub-pillars), to ensure they are in place or to

be in place to achieve the STISA outputs and mission[2]. On the other hand the analysis considered and examined key stakeholders and partners to identify their potential and roles. The analysis was designed to address the 1st phase of the STISA-2024 "Strategy kick-off and institutional setting" and to ensure the smooth running of its other phases (Implementation of series of flagship programmes).



STISA Implementation Phases

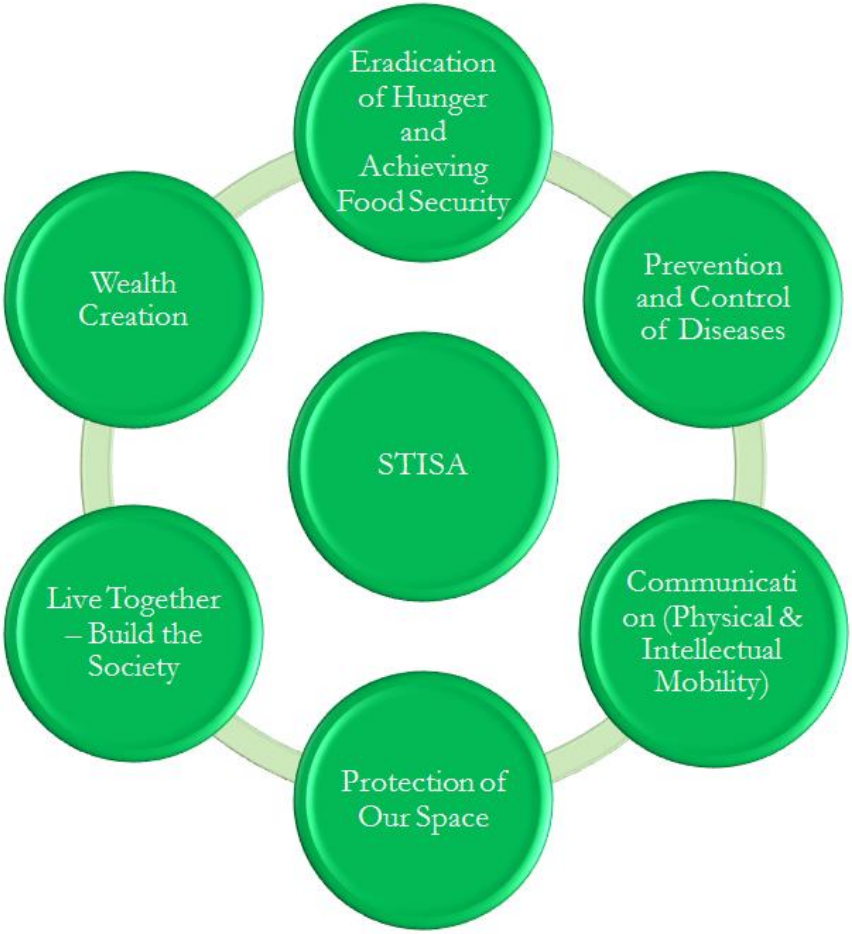
II STISA-2024 Policy Analysis

The STISA policy analysis was designed as mentioned earlier to ensure domestication and implementation of the strategy by Member States and Regional Economic Communities taking into consideration the challenges and the shortcomings in the CPA implementation. The policy analysis exercise was designed considering the following factors:

- The implementation of STISA-2024 strategy requires minimum set of requisite infrastructure, human resource with required skills and an enabling environment.
- AU Member States and RECs are at different stages of readiness in terms of finance, infrastructure, human and organizational capacity to properly undertake activities/ actions that addresses the STISA priority areas.

[2] The Mission of STISA-2024 is to *"Accelerate Africa's transition to an innovation-led, Knowledge-based Economy"*

- That the 1st phase of STISA implementation is focusing on putting in place required institutions at national, regional and continental levels to facilitate the integration of the strategy in national, regional and continental STI processes.
- The six priority areas identified under the strategy were recognized as the boundary conditionfor the finite element analysis exercise.



STISA Priority Areas

1. STISA-2024 Pillars Analysis

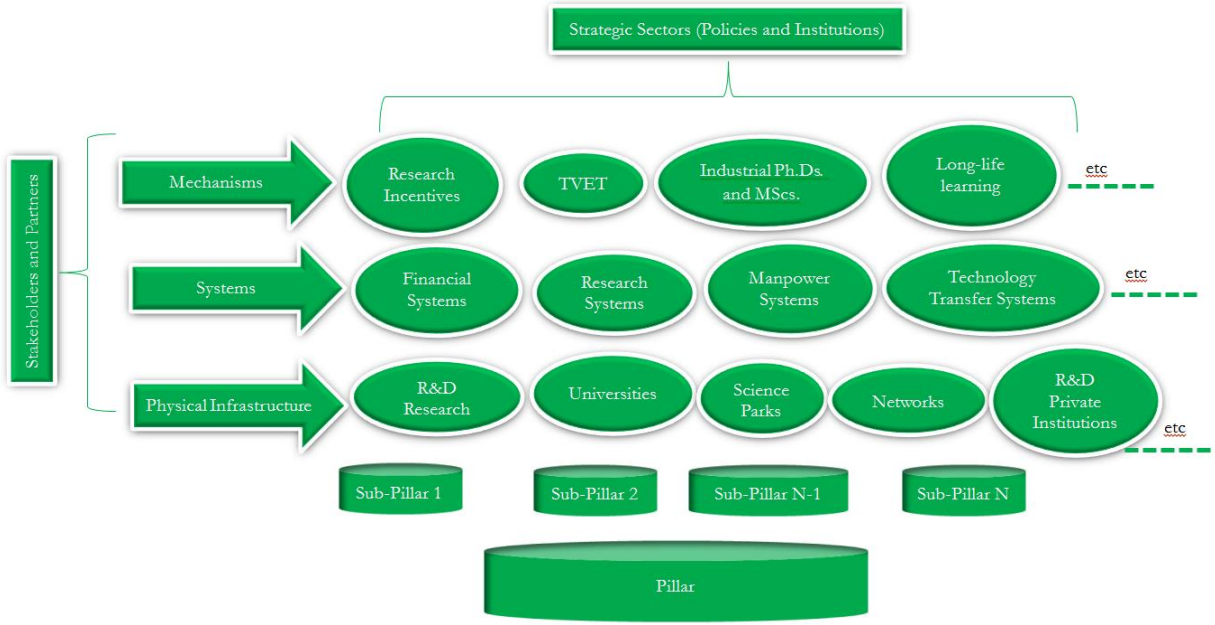
Using Problem Tree Methodology each of the STISA pillars were analyzed and the needed sub-pillars were identified, the table below represents the needed sub-pillars that came out from the analysis.

PILLARS	1. Research Infrastructure	2. Technical/Professional Competence	3. Innovation and Entrepreneurship	4. STI Enabling Environment
SUB-PILLARS	1.1 Strengthen existing National R&D Institutions 1.2 Establish new National R&D Institutions in the Priority Sectors 1.3 Encourage Private Sector to establish new R&D Institutions/Facilities 1.4 Encourage Private Sector to establish Universities/ Higher Education Institutions 1.5 Promote Science Parks 1.6 Promote Community Innovation Hubs	2.1 Build critical mass of MScs & PhDs with emphasis to industry 2.2 Promote Technology transfer & Acquisition 2.3 Promote Professional membership of regulatory bodies 2.4 Build lifelong learning 2.5 Promote Knowledge exchange and brain circulation 2.6 Develop advocacy programs and outreach at all AU levels	3.1 Technology Acquisition, transfer and commercialization 3.2 Commercialization of research outputs 3.3 Entrepreneurship capacity building 3.4 Local market protection 3.5 Financial instruments for entrepreneurship establishment 3.6 Inclusive Innovation (Community Innovation) 3.7 Green Innovation 3.8 Innovation capacity building	4.1 Development of Integrated market across all AU levels 4.2 Financial mechanisms to support STISA implementation 4.3 Enabling Infrastructure (ICT, Railways, roads etc.) 4.4 Advocacy & Communication 4.5 STI policies

STISA Pillars and its Sub-Pillars

2. Analysis of the STISA Sub-Pillars

Each sub-pillar was analysed considering the main analysis factors identified earlier to determine the needed **Physical Infrastructure, Systems, Mechanisms, Stakeholders and Partners**.



Analysis of the STISA Sub-Pillars

Using the finite element analysis the **Sub-Pillars** of **Pillars 1, 2 and 3** were analysed where the physical infrastructure, systems, mechanisms, stakeholders and Partners were identified, *see Annex 1, page 19*.

In pillar 4 analysis, due to its cross-cutting nature and its interaction with the other predefined pillars of STISA, the results of the three other pillars were taken into account and analyzed, clustered and examined against each of pillar 4 sub-pillars. Then a problem tree analysis was

conducted to test the reliability of the pre-identified systems to strengthen pillar 4 and its sub-pillars, *see Annex 2, page 29*.

III Output of the Analysis

The output of the analysis identified the policy gaps and institutional arrangements that may not exist in the majority of our Member States and/or its Regional Economic Communities, these gaps and arrangements are a must for STISA integration in national and regional STI processes. On the other hand the output of this analysis is designed to enhance stakeholder consultations, and communication campaigns that is to be conducted by the African Union Commission as per phase one of the STISA implementation.

The policy analysis exercise identified 13 policies and 7 institutions; some of these policies and institutions are interlinked and addressing commonalities.

1. Policy Clusters

Policy	Aim	Objectives	Stakeholders/ Partners	Reference Sub-Pillars[3]	Remarks
Investment Policy on R&D Infrastructures	• To build and strengthen existing R&D infrastructures in MS higher education institutions and research facilities • Encourage and facilitate the establishment of private	• Improve national budgetary allocation for R&D infrastructure • Maximize the use of existing infrastructure • Promote R&D agreements between private companies/SMEs and national research centres to attend to private	Stakeholders Member States institutions/ Ministries of Education, HRST/Div.Edu, PAU, RECs, AfDB, AAU, HRST/ Div.ST Partners UNESCO, World Bank, UNDP and UNIDO	1.1, 1.2, 1.3, 1.4, 4.2, 4.3, 4.5	• Policies to be developed at the level of MS • AUC may developed policy guide lines

[3] Reference Sub-Pillars are identified on page 5

	R&D institutions and facilities	sector R&D needs • Create an enabling/encouraging environment for private sector investment on Universities and Higher Education institutions • Facilitate Regulation on the establishment of private Universities and Higher Education institutions • Promote standardization and quality control systems for private Universities and Higher Education institutions			
Science Parks Promotion Policy	Encourage the establishment of science parks at the national level	• Leverage the entrepreneurship at National and Regional levels • Building the National and Regional entrepreneurship capacity • Attract more foreign direct investments • Extending the local/regional market size • Promote introduction of African made products to the	Stakeholders a. At Regional level RECs, AfDB, STRC, HRST/Div.ST, NEPAD, OTTA, CDPEE b. At Member States level Ministries of S&T, Ministries of Finance, Universities, Research institutions, Private S&T Entities, AfDB, RECs, STRC, HRST/Div.ST,	1.5, 4.1, 4.2, 4.3, 4.5	• Policies to be developed at the level of MS • AUC may developed policy brief

		African market • Incubate innovations and inventors • Create wealth	NPCA (NEPAD), OTTA, CDPEE. <u>Partners</u> UNIDO, UNDP, UNECA, World Bank		
National Policy on Community Innovation Hub	Encourage Existing Universities, Higher Education and Research Institutions at Member States to participate in addressing local community challenges	• Increase the impact of Universities, Higher Education and Research Institutions in community livelihood improvement • Link research centers and researchers with their community challenges • Promote more public recognition for STI as a magic way to address their dally problems and ultimately the national development agenda • Promote inclusive innovation concept among the research communities.	<u>Stakeholders</u> STRC, HRST/ Div.ST , NEPAD,OTTA,CD PEE Ministry of S&T, Ministry of Finance, Universities, Research Institutions, Private S&T Entities, AfDB, RECs. <u>Partners</u> UNIDO, UNDP, UNECA, World Bank	1.6, 4.3, 4.4, 4.5	• Policies to be developed at the level of MS • AUC may developed policy brief
Reviews on National Higher Education Policies	Linking national higher education policies to the national priority areas including national Industry needs	• Build critical mass of MSc's & PhDs with special emphasis to industry • Establish national councils of Industry, Higher Education and	<u>Stakeholders</u> PAU, HRST/ Div.Edu, AAU, DTI, NPCA (NEPAD), Ministries of S&T, Universities, Research Institutions, Private S&T Entities, and AfDB.	2.1, 4.3, 4.5	• Policies reviews at the level of MS • AUC may develop policy brief

		Research in Member States • Promote HR mobility between industry and academia	Partners UNESCO, UNIDO, UNDP, World Bank		
Policy on Technology Transfer, Adoption and Acquisition	Promotion of technology transfer, adoption and acquisition for wealth creation and market competitiveness	• Enhance productivity and value addition processes • Increasing market share for African products • Increase national (public, private) investment in technology transfer, adoption and acquisition • Promote human capacity building in technology related issues • Advocate for the role of technology in Africa's economic transformation • Establish legal framework in which African Union Member States would exchange their technological findings • Build Africa's Technology Market Place • Capitalize on the Africa market size to achieve better context/framework	Stakeholders STRC, DTI, NPCA (NEPAD), PAU PAIPO, AfDB, RECs, Ministries of S&T Partners UNIDO, UNTACD, ATPs, OTA, WIPO, UNECA, UNDP, World Bank	2.2, 3.1, 4.1, 4.2, 4.4, 4.5	Policies to be developed at all AU levels MS, RECs and AUC

		on technology licensing and production agreements • Enhance Africa human capacity competitiveness in the field of technology transfer and acquisition			
AU Policy Guideline on Professional and Practitioners Regulatory Bodies	Encourage Member States to establish professionals and practitioners regulatory bodies, while RECS and AU establish regional and continental bodies.	• Enhance knowhow exchange and practitioners capacity building in all the AU levels • Extend the size of the job market • Encourage professional mobility and mobilizations • Harmonize codes of conduct and work ethics	<u>Stakeholders</u> DSA, HRST, RECs, Any Labor Organization at AU level (if it exists) <u>Partners</u> ILO, UNDP	2.3, 4.1, 4.5	Guide line policy to be developed by the AUC
Policy on Lifelong Learning	Improve the competitiveness of African professionals and practitioners	• Improve the skills of African professionals and practitioners to address the priority areas/sectors of STISA • Extend the MS/ Africa benefit from existing work force • Promote career development and guidance • Extending job market size and wealth creation	<u>Stakeholders</u> HRST, DSA, RECs, Professional bodies at the level of MS, RECS and AU, any Labor Organization at AU level <u>Partners</u> ILO, UNDP	2.4, 4.1	

Policy on Knowledge Exchange and Brain Circulation	Introducing new / up-to-date knowledge to the African Knowledge society and ultimately to boost the African knowledge process	• Introduce a new dimension of cooperation and mutual benefit from the African Diaspora Scientists and their peers in Africa • Network the African Diaspora with their mother land for the benefit of the African knowledge society • Advocate and promote intra Africa cooperation in STI • Advocate and promote the role of friends of Africa in addressing Africa's problems and to create conducive environment for their active contribution • Advocate for Diaspora integration with their motherland • Africa bilateral and multilateral partnership in STI	<u>Stakeholders</u> STRC, PAU, AfDB, Ministries of S&T and Ministries of Foreigner Affairs <u>Partners</u> WIPO and UNESCO	2.5, 4.4, 4.5	• MS to develop National Policies to promote knowledge exchange and brain circulation • AUC may developed policy brief
Policy on Research Commercialization	To change Africa's entrepreneurship and enterprise land scape by addressing the demands and ambition of its entrepreneurs	• Develop a smart partnership between Private sectors and R&D institutions • Network the African research centres and the African	<u>Stakeholders</u> ASRIC/STRC, NPCA (NEPAD) hub, DTI, PAIPO, RECS, AfDB, Member States, Civil Society, R&D institutions, DEA, DTI, ATPs	3.1, 3.2, 3.4, 3.5, 4.1, 4.2, 4.3, 4.5	• MS to develop National Policies on Research Commercialization • AUC to develop the AU

		entrepreneurs • Identify Financial systems and laws needed to promote entrepreneurship and enterprise • Address the gaps in existing Education policies to introduce a new dimension of entrepreneurship development/Capacity Building • Introduce the concept of local market protection and advocate for made in Africa (Nationalism & Pan Africanism)	Partners World Bank, UNIDO, UNDP, UNECA		policy on Research Commercialization
Policy on Inclusive Innovation	Africa to utilize inclusive innovation as the driving force for its competitiveness and market access and to recognize its vital role in addressing the Africa's challenges and problems	• To link innovation cycle to the community needs • To recognize inclusive innovation as a wealth creation tool • Advocate inclusive innovation among the scientific and entrepreneurs communities	Stakeholders STRC, NEPAD, AOSTI, DTI, CDPEE, DEA, OTTA, AfDB Partners World Bank, UNIDO, UNDP, UNECA, UNEP	3.6, 4.1, 4.3, 4.5	• MS to develop National Policies on Inclusive Innovation • AUC to develop the AU policy on Inclusive Innovation
Policy on Green Innovation	To introduce extended dimension of green innovation to the AU and its Member States and to	• Introduce green innovation as new opportunity and challenge to the African scientific community • Highlight the	Stakeholders STRC, NEPAD, AOSTI, DTI, CDPEE, DEA, OTTA, AfDB Partners UNIDO, IEA,	3.7, 4.1, 4.2, 4.5	• MS to develop National Policies on Green Innovation • AUC to

	highlight the need for Africa to participate actively in the green economy, as new industrial era, where large opportunities are defined for wealth creation.	International trends on green innovation and identify African priority sectors • Identify financial mechanisms to integrate green innovation into national financial systems	UNDP, UNECA, World Bank, UNCTAD, UNEP, UNFCC, IPCC, OECD		develop the AU Policy on Green Innovation
National Strategy on Creative Thinking and Innovation Capacity Building	To introduce creative thinking and innovation capacity building to, the African education system at all levels	• To develop innovative thinkers and inventors • To develop competitive work force in African market	Stakeholders HRST/Div.Edu, PAU, NPCA (NEPAD), AOSTI, STRC, AAU, OTTA, PAIPO, CDPEE, MS, RECs Partners WIPO, UNU, UNDP, UNIDO	3.8, 4.5	• National strategy to be developed by MS • AUC to develop policy guidelines
Policy on Popularization of STI	Build public understanding and raising awareness on science, technology and innovation as a driving agent for social and economic transformation for Africa.	• Popularization and promotion of science, technology and innovation in AU Member States; • Promoting public understanding, participation and recognition of the Science, technology and innovation role; • Establishment of pressure groups for more resource allocation to STI in the national budget.	Stakeholders HRST, PAU, NPCA (NEPAD), AOSTI, STRC, PAIPO, CDPEE, MS, RECs Partners UNECA, UNESCO, WIPO,UNDP	All	• Policy on popularization of STI at all AU levels

2. Institutional Clusters

Institutional Arrangement	Aim	Objectives	Stakeholders/ Partners	Reference Sub-Pillars[4]	Remarks
Science Parks at Member States level	See the Science Parks Promotion Policy			4.1, 4.2, 4.3	
Community Innovation Hub	See National Policy on Community Innovation Hub			4.1, 4.3, 4.4	
Joint Council of Industry and Higher Education/ Research	To provide a platform for researchers, research institutions, higher education institutes and industries for cross-fertilization of ideas and eventually to link higher education priority areas and those of the industry	• Introduce joint research areas on the priorities of Industry • Empower/Improve research facility in Universities/Research Institutions • Maximize the number of Ph.D. and MSc. research work that responds to the national industry challenges. • Create innovative ways/alternative resources to fund R&D in universities to maximize national R&D expenditure and promote HR mobility between industry and academia	Stakeholders PAU, HRST/Div.Edu, HRST/Div.ST, DTI, NPCA (NEPAD), AAU, Member States Higher Education and Research institutions, AfDB, Partners UNESCO, World Bank, UNIDO, UNDP	2.1, 4.1, 4.2, 4.3	• MS to carry out national policy reviews to the existing higher education policies • AUC is to develop policy guide lines
Office of Technology Transfer and Acquisition	Narrow the technology gap between Africa and the rest of the World and to proffer indigenous solutions to African problems	• Facilitate technology transfer and acquisition between Member States • Develop action plans/policies aimed at integrating technology to national priority development sectors • Accelerate economic	Stakeholders ASRIC/STRC, PAU, DTI, PAIPO, NPCA (NEPAD) Hub AfDB, AAU, R&D Institutions in Member States, RECs	2.2, 3.1, 4.1, 4.2, 4.3, 4.4	• MS • RECs • AUC

[4] Reference Sub-Pillars are identified on page 5

		growth from commodity base economy to value addition economy • Lead the transition of Africa's economy to innovation led economy • Promote 'Made in Africa' products and harmonize standards at all AU levels • Develop market gap analysis and technology commercialization plans	Partners UNIDO, UNTACD, ATPs, OTTA, WIPO, UNECA, UNDP, World Bank		
African Union Network of Sciences	To utilize the talent of the African scientific community to address one another's problems and challenges and allow them to recognize the diversity of Africa and its benefits. It is also a breakthrough to introduce the virtual lab, virtual library and open source to the African scientists.	• Facilitate access to up-to-date information • Foster knowledge production and sharing • Boost the scientific knowledge in Africa • Create forums for discussion and interaction • Enhance intra-Africa research • Bridge the African scientists in Diaspora and at home by introducing a new dimension of brain circulation • Enable the environment/tool for the friends of Africa to contribute to Africa's socio-economic development and • Promote publication sharing and open access.	Stakeholders ASRIC/STRC, PAU, AAS, AAU Partners WIPO, UNESCO	2.5, 4.1 , 4.3, 4.4	• AUNS
National Centre for Development & Promotion of Entrepreneurship and Enterprise (CDPEE)	To build the entrepreneurship capacity of African researchers and university students.	• To promote entrepreneurship at the national level • Network the enterprises and entrepreneurs at national level • Identify financial	Stakeholders ASRIC/STRC, HRST/Div.Edu, PAU, NEPCA (NEPAD) hub, DTI, PAIPO, AfDB, Member	4.1, 4.2, 4.3	

		mechanisms to commercialize research outputs	States- Civil Society, R&D Institutions, DEA, ATPs		
African Union Trade Office (AUTO)	To strengthen Intra Africa Trade	• To establish smart connection between production and demand at the AU level • To enhance intra-Africa trade in domains other than commodities • Increasing the market size and opportunities for Africa's SMEs and enterprise	<u>Stakeholders</u> DTI, ASRIC/STRC, DEA, RECs <u>Partners</u> UNTACD, UNIDO, ATPs, OTTA, WIPO, UNECA	4.1, 4.2, 4.3	

IV Annexes

Annex 1: Output of the Finite Element Analysis for the Sub-Pillars of Pillars 1, 2 and 3

a. Pillar 1: Research Infrastructure

Research Infrastructure					
Sub-Pillar	**Physical Infrastructure**	**Systems**	**Mechanisms**	**Stakeholders**	**Partners**
1.1 Strengthen existing National R&D Institutions	Existing Universities, Polytechnic, Research Institutions and Centres	Investment policy on R&D infrastructures	• Improved budgetary allocation for R&D infrastructures • Maximize the use of existing infrastructures • Tax waivers on R&D materials and equipment • Research grants	Member States institutions/ Ministries of Education, HRST/Div.Edu, PAU, RECs, AfDB, AAU	World Bank, UNESCO
1.2 Establish of new National R&D Institutions in the Priority Sectors	Member States to identify R&D centres to be established in their predefined priority research sectors	To be identified by each individual Member State	Member States to identify the right mechanisms to address the systems needed	Member States institutions/ Ministries of Education, HRST/Div.Edu., PAU, RECs, AfDB, AAU	World Bank, UNESCO, and others to be identified by the relevant Member State
1.3 Encourage Private Sector to establish new R&D Institutions/ Facilities	Small research unit/facility to be attached to SMEs/ companies R&D agreement between private companies/SMEs and national research centers to attend to private sector R&D needs	Policy on the engagement of Private Sector on R&D	• Regulation of R&D • Award/Incentives • Policy and advocacy • Enabling environment	DTI, DEA, STRC, AfDB, NPCA (NEPAD)	UNDP, UNCTAD, World Bank

1.4 Encourage Private Sector to establish Universities/ Higher Education Institutions	Private Universities/ Higher Education Institutions in predefined priority sectors	Regulation on the establishment of private Universities/Higher Education Institutions Standardization system for private Universities/Higher Education Institutions	• Incentives to attract more private sectors to invest in Higher Education • Quality assurance and control • Considering the predefined priority sectors • Education to be linked to job market	HRST/Div.Edu, HRST/ Div.ST, NPCA (NEPAD) Education hub, PAU, Network of private education institutions at the level of MS, AAU	UNESCO, World Bank
1.5 Promote Science Parks	Science parks at RECs& Member States levels	Policy to encourage the establishment of science parks at the national and regional levels	• Financial mechanisms (Investment plan to be encouraged in RECs & Member States) • Technology gap analysis/Market need • Assessment of STI priority areas in Regional economic communities and Member States • Comparative advantage assessment in Regional Economic Communities and Member States	At Regional level AfDB, RECs, STRC, HRST/Div.ST, NPCA (NEPAD), OTTA, CDPEE At Member States level Ministries of S&T, Ministries of Finance, Universities, Research institutions, Private S&T Entities, AfDB, RECs, STRC, HRST/Div.ST, NPCA (NEPAD), OTTA, CDPEE	UNIDO, UNDP, UNECA, World Bank
1.6 Promote Community Innovation Hubs	Existing Universities, Higher Education and Research Institutions in Member States	National policy on the establishment of community innovation hubs	• Community needs assessment • Advocacy • Research facility • Funding	STRC, HRST/ Div.ST, NPCA (NEPAD), OTTA, CDPEE Ministry of S&T,	UNIDO, UNDP, UNECA, World Bank

			• Incentives (Grants, Recognition) • Networking (Public, Private and community,	Ministry of Finance, Universities, Research institutions, Private S&T Entities, AfDB, RECs.	

b. Pillar 2: Technical/Professional Competences

Technical/Professional Competences					
Sub-Pillar	**Physical Infrastructure**	**Systems**	**Mechanisms**	**Stakeholders**	**Partners**
2.1 Build critical mass of MScs & PhDs with special emphasis to industry	Improvement of research facilities in Universities/Research Institutions Establishment of a Joint Council of Industry and Higher Education/ Research	Reviews of existing Higher Education policies with emphasis to postgraduate studies, linked to national priority areas including industry	• Higher education trust fund, • Scholarships, Loans, Awards & Grants • Curriculums development/updating • Exchange programs • Industrial scholarship for PhDs/MScs • Professional capacity building programs • Promotion of HR mobility from industry to academia and vice versa • Industrial Attachment Programs	PAU, HRST/Div.Edu, DTI, NPCA (NEPAD), AAU, Member States Higher Education Institutions, and AfDB	UNESCO, World Bank, UNIDO, UNDP
2.2 Promote Technology Transfer & Adoption	Establish Offices of Technology Transfer and Acquisition (OTTA) at all the AU levels	Policy on Technology Transfer and adoption Advocacy and popularization policy on Technology Transfer and Adoption Harmonization of standards in all AU levels	• Promotion of made in Africa products • National subsidies support for locally made products • Quality control and quality assurance	STRC, DTI, NPCA (NEPAD), PAIPO, AfDB, RECs,	UNIDO, UNECA, World Bank,
2.3 Promote Professional Membership of	National Professional Organizations (Professional Associations,	Policy on establishment or strengthening	• Statutes • Codes of conduct & Ethics	DSA, RECs, Any Labor Organization at AU level (if it	ILO

	Regulatory bodies	Syndicate and other professional regulatory bodies) Establish professional Associations at the level of the AU and RECs	of professional regulatory bodies in all the AU levels	• Advocacy • Capacity Building • OTTA • Professional mobility • Resource mobilization	exists)	
2.4	Build a robust Lifelong Learning	CPDEE[5] Units in Universities, National Research Institutions TEVT Institutions Professional Regulatory bodies	Policy on Lifelong Learning	• E-learning • Curriculum • On job/hands on training • Financial mechanism for career change/adaptation • Development of targeted programs &thematic for priority[6] sectors		
2.5	Promote Knowledge Exchange and Brain Circulation	African Union Network of Science Ministry of Foreign Affairs (Special unit for Diaspora Integration and relations) Unit of bilateral and multilateral African cooperation within Ministries of Science and Technology	Policy to promote knowledge exchange and brain circulation	• Technical/Scientific networks • Data repositories and libraries • University Chairs • Incentives (Including visiting home programs, relocation grants) • Bilateral and multilateral agreements • Sister universities programs	STRC, AUNS[7], AOSTI, AAS[8], AAU, PAU, HRST/Div.Edu	WIPO, UNESCO

[5] CDPEE = Centre for Development and Promotion of Entrepreneurship and Enterprise
[6] See footnote 3
[7] African Network on Sciences
[8] African Academy on Sciences

2.6 Develop advocacy programs and outreach at all AU levels	OTTA	National strategy/policy to publicize technical competence	• Utilizing network of media organization at all levels of AU, RECs & MS • Exhibition, forums, trade fairs • Introduce/create publicity units within industries/SMEs • Outreach programs to communities • Parliamentarian campaigns & lobby • Networking • Financial support to fund Technical competences programs	DCI, AUNS, MS Media Organizations, RECs, AJA	ITU, ECOSSOC

c. Pillar 3: Innovation and Entrepreneurship

Innovation and Entrepreneurship					
Sub-Pillar	**Physical Infrastructure**	**Systems**	**Mechanisms**	**Stakeholders**	**Partners**
3.1 Technology Acquisition, Transfer and Commercialization	Establish Offices of Technology Transfer and Acquisition (OTTA) at all the AU levels	Policy on technology transfer& acquisition	• Budgetary allocations • Incentives (loans, grants, etc.) • PhDs/ MScs addressing technology transfer particularly and Science policy in general • TVET • Technology need analysis	ASRIC/STRC, PAU, PAIPO, AOSTI, AfDB, NPCA (NEPAD) Hub, AAU, and R&D Institutions in Member States	UNIDO, UNTACD, ATPs, OTTA, WIPO, UNECA, UNDP, World Bank
		Strong IP systems	• Protection legislations • Promotion and commercializatio n of IP		
		Networking	• African Technology market place and exhibitions • African network of technologies		
3.2 Commercialization of research outputs/outcomes	Secretariat within existing structure (Universities, Ministries of S&T, OTTA, CDPEE, RECs)	Research Commercialization Policy	• Networking the African research centres • Networking the African entrepreneurs • Rewards &	ASRIC/STRC, NPCA (NEPAD) hub, DTI, PAIPO, RECS, AfDB, Member States-Civil Society,	UNIDO, WTO, WIPO, UNCTAD, World Bank, and UNECA

			• Incentives • Private sectors and R&D Institutions	R&D Institutions, DEA, ATPs	
3.3 Entrepreneurship Capacity Building	Establish Centre for Development& Promotion of Entrepreneurship and Enterprise (CDPEE)	Financial systems to promote entrepreneurship and enterprise	• Loans, grants, micro-financing. • Network of Entrepreneurs,	HRST/Div.Edu, PAU, AfDB, Private Sector Institutions, PAIPO, AAU, ACBF	UNESCO, World Bank, UNDP, WIPO, UNCTAD
	Existing Universities and Educational Institutions	Develop/ Review of education policy to include entrepreneurship development/capacity building	• Curriculums • Training of trainers, • Awards of excellence		
3.4 Local Market Protection	Establish African Union Trade Office (AUTO)	• Develop/review of existing national polices to encourage local production, • Financial system to assist local production competiveness, • Advocacy policy (Nationalism & Pan Africanism), • IP/GIs systems • Policy on Intra-Africa trade	• Network of Manufacturers & Inventors, • Incentives, rewards, tax waivers, Subsidies, • Rebates on imports for local production, • Pan Africa products popularization • Standardization and harmonization	RECs, DTI, DEA, AfDB, National Chambers of Commerce, MS Ministries of Economic Affairs, MS Ministries of Finance, national media organizations	UNCTAD, UNECA, UNDP, World Bank, WIPO, UNIDO, ITU
	RECs, OTTA, CDPEE, Standard Organizations at the level of MS				
3.5 Financial Instruments for Entrepreneurship Establishments	Existing financial institutions at the level of Member States, RECs	Financial laws and policies for promoting entrepreneurship	• Banking& Microfinance for Entrepreneurship • STI entrepreneurship tax on commodities	AfDB, Member States, RECs, Private Sector, Banking Institutions, DEA	World Bank, UNDP, UNCTAD

			• Incentives (Subsidies for STI entrepreneurship among others) • Member States Governmental budgetary allocation for STI • Entrepreneurship funds from alternative sources		
		Corporate Social Responsibility advocacy policy for entrepreneurship	• Private sector participation in funding SMEs • Incentives for fund raising/support for SMEs		
3.6 Inclusive Innovation (Community Innovation)	Research Institutions, Universities, Community Innovation Hubs, Science Parks	Policy on Inclusive Innovation	• Financial schemes (incentives, microfinance, tax rebates etc.) • Recognition& Awards • Roles of private sector including corporate social responsibilities • Community, social and economic needs assessment / prioritization • Innovation ethics mechanisms	STRC, NPCA (NEPAD), AOSTI, DTI, CDPEE, DEA, OTTA, AfDB	World Bank, UNIDO, UNDP, UNECA, UNEP
3.7 Green Innovation	• National Planning Offices/Agencies at Member	Policy on green innovation	• Need analysis (international trends on green innovation and	STRC, AUNS, HRST/Div.ST, NPCA (NEPAD), DIE, DTI, DREA,	UNIDO, IEA, UNDP, UNECA, World

	States Level • Ministries (Environment, Science& Technology, Agriculture, Energy)		identified national priority sectors) • Market forecasting • Financial mechanism (incentives, loans, grants etc.) • Network of Green Technology& Entrepreneurship • Green technology transfer & entrepreneurship (OTTA & CDPEE) • Green Innovation culture	PAU, OTTA, CDPEE, AfDB, MS/RECs	Bank, UNCTAD, UNEP, UNFCC, IPCC, OECD
3.8 Innovation Capacity Building	Higher Education &TVET Institutes	National strategy on creative thinking and innovation capacity building	• Curriculum for creative thinking • Network of innovators • Knowledge exchange & brain circulation plans • Grants, Competitions & Exhibitions • Entrepreneurship capacity building (workshops, exhibition, publicity, training)	PAU, NPCA (NEPAD), AOSTI, HRST/Div.Edu, STRC, AAU, OTTA, PAIPO, CDPEE, MS, RECS	WIPO, UNU, UNDP, UNIDO

Annex 2: The Analysis of Pillar 4: Enabling Environment

Enabling Environment		
Development of Integrated Market across all AU levels		
Systems	**Policies**	Intra Africa Trade Policy, Science Parks Promotion Policy, Policy on Technology Transfer, Adoption and Acquisition, AU Policy Guideline on Professional and Practitioners Regulatory Bodies, Policy on Lifelong Learning, Policy on Research Commercialization, Policy on Inclusive Innovation, Policy on Green Innovation
	Institutions	Science Parks at Member States Level, Community Innovation Hubs, Joint Council of Industry and Higher Education/ Research, Office of Technology Transfer and Acquisition, African Union Network of Sciences, National Centre for Development & Promotion of Entrepreneurship and Enterprise (CDPEE), African Union Trade Office (AUTO)
Financial Mechanisms to support STISA implementation		
Systems	**Policies**	Investment Policy on R&D Infrastructure, Science Parks Promotion Policy, Policy on Technology Transfer, Adoption and Acquisition, Policy on Research Commercialization, Policy on Green Innovation
	Institutions	Science Park at Member States level, Joint Council of Industry and Higher Education/ Research, Office of Technology Transfer and Acquisition, National Centre for Development & Promotion of Entrepreneurship and Enterprise (CDPEE), African Union Trade Office
Enabling Infrastructure (ICT, Railways, Roads, etc.)		
Systems	**Policies**	Investment policy on R&D Infrastructure, Science Parks Promotion Policy, National Policy on Community Innovation Hub, Reviews on National Higher Education Policies, Policy on Research Commercialization, Policy on Green innovation
	Institutions	Science Parks at Member States level, Community Innovation Hub, Joint Council of Industry and Higher Education/ Research, Office of Technology Transfer and Acquisition, Office of Technology Transfer and Acquisition, African Union Network of Sciences, National Centre for Development& Promotion of Entrepreneurship and Enterprise (CDPEE), African Union Trade Office (AUTO)
Advocacy & Communication		
Systems	**Policies**	National Policy on Community Innovation Hubs, Policy on Technology Transfer, Adoption and Acquisition, Policy on Knowledge Exchange and Brain Circulation
	Institutions	Community Innovation Hubs, Office of Technology Transfer and Acquisition, African Union Network of Sciences
STI policies		
Systems	**Policies**	Investment Policy on R&D Infrastructures, Science Park Promotion Policy, National Policy on Community Innovation Hubs, Review on National Higher Education Policies, Policy on Technology Transfer, Adoption and Acquisition, AU Policy Guideline on Professional and Practitioners Regulatory Bodies, Policy on Knowledge Exchange and Brain Circulation, Policy on Research Commercialization, Policy on Inclusive Innovation, Policy on Green Innovation, National Strategy on Creative Thinking and Innovation Capacity Building
	Institutions	Office of Technology Transfer and Acquisition,

Part 2

Defining Policies and Institutions for STISA-2024 Implementation

V POLICIES AND INSTITUTIONS

Following the identification of the systems and mechanisms needed for the STISA-2024 implementation *(Part 1 of this study)* where thirteen (13) policies and seven (7) institutions were defined[9]; it became pertinent to provide the AUC and its specialized institutions, Member States, RECs and partners with a guideline for a common understanding to ensure effective domestication and integration of the STISA in to their respective development plans.

These policies and institutions serve as a catalyst for the successful diversification of economies and sustainable development, particularly in the areas of human capacity, entrepreneurship, R&D and innovation towards the achievement of the STISA-2024 vision and effectively respond to the Agenda 2063 aspirations. In addition, the policies and institutions provide the stakeholders an opportunity to attract more investments in the science, technology and innovation spectrum.

In this part of the study a concise summary was developed to shed light on these policies and institutions.

[9] When developing this part (Part 2), we clustered some of the policies and institutions together because they are interlinked and addressing the common output. That results being, having the total number of policies and institutions reflected hereafter to be seventeen.

1. POLICY ON R&D INFRASTRUCTURE INVESTMENT

AIM:

To build and strengthen existing R&D infrastructure in Member States' Higher Education Institutions and Research facilities, encourage and facilitate the establishment of private R&D institutions and facilities.

BACKGROUND:

The African Union Member States generally have inadequate institutional arrangements for STI in general and for R&D in particular. The quality of research in these institutions is generally poor, for instance laboratories of most African countries' institutions are not well equipped or outdated. This clearly affected the research output of the African Union, where between 2005 and 2010, it produced 1.8% of the world's total research output. Funds allocated by Member States for R&D is far behind the requested target of 1% GDP, which was endorsed by the AU Summit in Addis Ababa 2007 Declaration. A closer look shows that the private sector is contributing 0.1% to 13.7% of the GERD[10] while the investment channelized from out of the Continent accounts 12.1% to 59.6%[11], most of these investment are grants and not by any mean targeting the research infrastructure.

It is fact that Africa's population is 15% of the world while the African higher education system is made up of over 2,450 post-secondary institutions (about 7% of the world's total). The relation is liner but considering the population pyramid it is more astonishing, that 60% or more of the African population are in school age. That is, Africa needs to have doubled the number of universities. By the end of STISA 2024 the population projection of Africa shows that it will be more than 1.7 billion, which will pressurize the educational facilities and system, particularly higher education. Recent trends in countries like Ghana, Ethiopia, Nigeria and South Africa show about 10 candidates struggling for one available university space. In 2007 at Osun State

[10] GERD Gross domestic expenditure on research and experimental development
[11] African Innovation outlook II, 2014

University, Nigeria, over 100,000 candidates applied for 500 available spaces. In 2011, a total of 99,195 candidates applied to the University of Lagos and only about 9,000 could be offered admission[12]. The only way for Africa to overcome and move forward is to establish more universities and the only sector that has the potential to do it is the African private sector considering the existence of a conducive environment to invest in Higher Education Institutions and Research Facilities.

The above mentioned needs to be challenged by constituting a policy that can address smart partnership between business and existing R&D institutions where the business invest more on GERD with especial attention to be given to R&D infrastructure. The policy will address among others the private sector role in establishment of private higher education institutions and to build environment that is conducive.

OBJECTIVE:

- To improve national budgetary allocation for R&D infrastructure;
- To maximize the use of existing infrastructure;
- Promote R&D agreement between private companies/SMEs and national research centres to attend to private sector R&D needs;
- Create an enabling/encouraging environment for private sector investment in Universities and Higher Education Institutions;
- Facilitate regulations on the establishment of private Universities and Higher Education Institutions; and
- Set standards and quality control systems for private Universities and Higher Education Institutions.

ACTIVITIES:

At the level of the African Union:

[12] Emerging Regional Developments and Forecast for Quality in Higher Education in Africa, 2014

- Development of Policy guideline to assists Member States to develop their own national policies on R&D investment; and
- Promote building of robust R&D infrastructure.

At the level of AU Member States:

- Consultation and functional link between private sector and R&D institutions;
- Development of national R&D infrastructure investment policy; and
- Set up, the systems and mechanisms to ensure the implementation of the policy.

EXPECTED OUTCOMES:

- More updated or improved R&D infrastructure;
- Business SMEs better linked to the national R&D systems;
- Strengthened and built new Higher Education Institutions at the Member State level; and
- More publications and patents.

2. POLICY ON SCIENCE PARK PROMOTION

AIM:

Encourage the establishment of science parks at national level

BACKGROUND:

The first science and technology park was created on the campus of Stanford University more than 50 year ago. It has transformed to Silicon Valley area from one of the poorest regions in the USA into a global centre of technology, finance, education and research[13]. Ever since, there has been a plunge and proliferation of science and technology parks globally. Africa is not left away as few Member States of the African Union have join the wagon by establishing one or two parks with the highest number of five in South Africa.

There have been several definitions of the science and technology parks but the official definition adopted by the International Association of Science Parks (IASP) is that a science park is an organization managed by specialized professionals, whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions among many others.

The policy on science and technology park promotion will consider disparity and uneven spatial techno-economic development of the Member States, which STISA 2024 is based on. It will address the needed systems to set up science parks, which include both the soft (programmatic) and hard (physical) aspect of the infrastructure. It will also examine the economic impact of the science park on the national and continental levels.

The prioritization of the scientific and technological areas biotechnology, electronics, green technology, information and communication technology, precision engineering, chemicals and mineralogy etc. are left for the Member States to determine while the African Union sets the continent's priority and composition of the park based on the predefined terms of reference.

[13] UNESCO Concept note on Science Park

OBJECTIVES:

- Leverage entrepreneurship at the national and regional level;
- Build national and regional entrepreneurship capacity;
- Attract more foreign direct investment;
- Expand the local/regional market size;
- Introduce new products that are 'Made in Africa' to the African market;
- Incubate innovations and inventions; and
- Create wealth.

ACTIVITIES:

- Consultation meeting with International Association of Science Parks;
- Conducting a visibility study on the economic impact of Science Parks;
- Development of draft policy brief;

EXPECTED RESULTS:

- Member States engaged in the development and establishment of their Science Park; and
- More African made products in the African market.

3. NATIONAL POLICY ON COMMUNITY INNOVATION

AIM:

To promote the roles of Higher Education and Research Institutions, Universities as a catalyst for socio-economic development of communities by addressing challenges and building a common front to empower communities.

BACKGROUND:

Although efforts are made in some national research systems to take on board real challenges of communities, majority of the science and technology personnel are centered on publishing research work, developing world class technology or invention of something with global recognition and not mindful of solving local communities' immediate problems and needs of Africa. Hence, the local communities never appreciate the roles of universities in attending to their daily needs. This disconnects between Universities and Communities, as well as policy and decision makers, has been touted to be bridged by this policy.

However, it is fact that majority of the Member States have not invested much in science, technology and innovation for which adequate data are not available. These Member States fall far below the international average for all the components that reflect science, technology, and innovation capabilities. It may be one of the reasons why the universities failed to translate knowledge, education, and learning into institutions, activities, or products that promote science and technology as a catalyst for socio-economic development.

Africa is largely considered to be an agrarian community that survived on farming, animal husbandry, foods stuff, handicraft etc. but endowed with vast wealth of natural resources which is not translated to the economic development. This policy will encourage and propagate the Universities and Research Institutes to view innovation as the key to fight the current economic downturn by helping communities in their uniqueness and unparalleled inequalities to grow and create wealth. For example, considering the comparative advantage of Africa and the tropic region elsewhere, constitute more than 200,000 out of the 300,000 plants spices identified

globally[14]. The creative economy on handicraft in Africa does potentially offer more resilient, inclusive, and environmentally viable paths to recovery and growth of the continent in its uniqueness, and local communities mostly do these works without assistance from the government and/or Universities.

The precursor to the policy lies on the community needs assessment that will propel local community university interaction forum with the aim of getting a common sharing and understanding of the problems and challenges that engulf immediate community via improved innovation support mechanisms. These will be supported by building and strengthening inter community-university interaction and advisory to vice versa.

The policy will promote the establishment of community innovation hubs within existing national Higher Education, Research Institutions and Universities that will cluster products, produces and services as effectively as possible taking into cognizance the niche and comparative advantage of every region/village to have one or two products per village to be worked on by its research communities.

At sectorial level, innovation clusters can help create entirely new product, produce and service sectors in particular by developing and promoting new technology-based products and services in close partnerships between larger firms, universities, innovative SMEs and local user groups within the community. Such products and services clusters often need different forms of support, as users play a much stronger role in them and they are more often at the crossroads between different sectors, technologies and professions. The policy will build a strong "eco-system" favoring products and services innovation needs to happen first at community and regional levels, making communities and regions attractive to creative people and linking them with strong knowledge institutions, investors and innovative SMEs.

At market level, products and services innovation can be best stimulated by activating demand for innovative products and services concepts, and removing barriers for their practical use. Building trust for consumers and end users, and using sales, purchase and public procurement as a catalyst for services innovation, helps develop the innovation potential created by technological

[14] Abayomi Sofowora (2008) Medicinal Plants and Traditional Medicine in Africa

development and innovative enterprises, supported by strong "eco-systems" at community and regional level. This will stem or create more favorable conditions for new markets to emerge.

OBJECTIVES:

- Increase the impact of Universities, Higher Education and Research Institutions on community livelihood improvement;
- Link research centres and researchers with their community needs;
- More public recognition for STI as a panacea to address their challenges and ultimately accelerate national development agenda;
- Introduce and add value chain to the community product including exploration of new market
- Promote the establishment of community innovation hubs; and
- Promote inclusive innovation concept among the research community.

ACTIVITIES:

At the level of the African Union and Regional Economic Communities:

- Policy guideline development (which include the following sub activities: drafting the policy guidelines on community innovation, review and consultation meeting with the relevant stakeholders);
- Capacity building for Member States officials on community innovation;
- Advocacy programs on community innovation; and
- Development of guidelines on the establishment of national/regional community innovation hubs

At the level of AU Member States:

- Coordination meeting on the need for the development of the national policy on community innovation;

- Forum for interaction between universities, decision makers and host communities;
- Identification and clusterization of community innovation hubs at region and national level;
- Development of national policy on community innovation;
- Development of the national roles and procedures on the establishment of national community innovation hubs; and
- Advocate for nationally made products and those made in Africa for market protection.

EXPECTED RESULTS:

- Policy document and guideline on community innovation;
- Trained experts on community innovation at the Member States level;
- Developed advocacy programme on community innovation;
- Reports of coordination meetings;
- Functional forum for interaction between universities and communities; and
- Clustered community innovation hubs at the regional and national levels.

4. GUIDELINE ON REVIEW OF NATIONAL HIGHER EDUCATION POLICIES

AIM:

Linking national higher education policies to the national priority areas including national industry needs

BACKGROUND:

Education is the most powerful weapon for equipping African people with the necessary knowledge, skills and attitude to be able to drive the AU vision. Quality higher education in particular is imperative if Africa has to attain this vision, generate homegrown solutions to African challenges[15]. Higher education has been identified as a major area of focus in the Africa Union Plan of Action for the Second Decade of Education for Africa (2006-2015) for revitalization of higher education in the continent and its successor Continental Education Strategy for Africa (2016-2025).

Africa's population is 15% of the world population while the African higher education system is made up of over 2,450 post-secondary institutions[16] (about 7% of the World's total). In spite of the large number of higher education institutions, demand outstrips supply thereby limiting access. The massification in enrolment is one of the highest in the world, yet a large number of eligible candidates for higher education cannot be accommodated due to lack of space. The higher education participation rate also remains low, averaging 18% for the Africa.

Another dimension to the question of access is the wide gap between need and demand especially for courses, which are critical for rapid economic development. While science and technology are the highly needed areas, the demand for science and technology education is generally low. Also, gender inequity persists in enrolment and participation with females being

[15] Pan African University Project Document
[16] Emerging Regional Developments and Forecast for Quality in Higher Education 2014

under-represented. The male/female ratio in higher education enrolment across the Africa is about 2:1 with discouraging ratios in science, technology, engineering and mathematics.

On facilities for delivering quality higher education and conduct of impactful research, more than 80% of the higher education institutions and research centres are poorly resourced. Classrooms are noted for inadequate seating spaces for the large number of students in many cases as reported by national quality assurance agencies. Dilapidated furniture and obsolete laboratory and workshop equipment for teaching and research is the rule rather than the exception. ICT use is still in its rudimentary stage especially by older academics and regular Internet availability remains a challenge. Inadequacy of computer facilities, Internet connectivity, accessibility, affordability, stable electricity supply is a great hindrance to creating research friendly environment. Well-equipped library with up to date journals, textbooks and other periodicals is of great importance to the development of higher education. However, there are limited numbers of subscriptions in scientific and academic journals in Africa; it was arguably attributed to the low research output from the Africa.

Human capacity deficit is another plight, which bedevils the system. The average percentage of staff with PhD in public higher education institutions in Africa is estimated to be less than 20 percent. Many departments do not have more than one or two senior professors, and many of them are close to the retirement age. This prevents departments and universities from establishing vibrant research environments. The relatively low salaries of academic staff and inadequacy of research funding and equipment as well as limited autonomy provide disincentives for professors to stay in African universities, on many occasions resulting in brain drain. This is particularly challenging for fragile and post-conflict countries, such as Sierra Leone and Liberia, where scholars often have left the country.

Curriculum irrelevance to the present and future needs of the socio-economic context of Africa has been a matter of concern. Also, employability of graduates has been a vexed issue in view of the poor quality of products from the higher education system. Quality of graduate production does not match labor market demand or development needs. The result is that while graduates of many higher educational institutions in the continent go unemployed, substantial shortages of skilled labor persist. The challenge is to increase the capacity and the supply of these disciplines, invest in laboratories and human resources for these disciplines, and improve

the link with employers to raise relevance and foster strong international collaboration to raise quality. It is delightful to note an increasing slant of many of the institutions towards entrepreneurial education. This has to be pursued with greater vigor.

Africa is endemic to insecurity/conflict and recently to infectious Ebola Virus Disease. There is also the problem of linguistic diversity. These problems hinder teacher-student mobility, fieldtrip, excursion and academic visits but all these are beyond the realm of higher education but directly impede on its development.

With regard to research, while some national research laurels have been won by scholars in Africa, but they remain paltry when compared with global achievements. Within the African context, Southern and Northern Africa outspace the west in globally acclaimed research activities. Africa is at the bottom of almost every knowledge economy indicator. For instance in 2013, it contributed 0.07 percent of global patents applications, an indication of the continent's lack of technological leadership. The continent has some of the lowest researcher-to-population ratio in the world with 17 researchers in R&D per million people in Ghana, 38 in Nigeria and 45 in Burkina Faso compared to an average of about, 481 in Latin America, 1,714 in East Asia and Pacific and 2,664 in Europe and Central Asia. Improving these indicators is a concern for future knowledge-based economic growth especially in Africa whose researchers had to send samples of body fluids to Europe for testing for the Ebola virus, after five decades of practice of medical science post-independence. That being said, there are a number of promising developments, notably pockets of dynamic and internationally linked researchers, institutions responding innovatively and regionally to the opportunities, and most importantly, a growing pool of promising, young African talent knocking on the doors of higher education.

Higher education quality control and assurance within Africa operates in varying modes and models. While the Anglophone countries have their independent national quality assurance agencies, the francophone operate within the ambit of CAMES. Only recently has Senegal set up its independent national quality assurance agency. The need for harmonization of processes across the region will be beneficial for quality enhancement and mutual recognition of degrees. The African Union Commission recently in 2010 have developed a African Quality Rating Mechanism AQRM as a pilot plan for the continuous assessment of higher education in Africa

for objective measure of quality in higher education institutions through institutional self-assessment.

The policy reviews focus on STISA 2024 priority areas and those of the industries based on the needs of the continent and the Member States. The science and technology sector of the Member States must develop the need analysis and demand forecast of the country while the policy review will dwell on directing the higher education institutions on producing Masters and PhDs graduate. The African Union through its continental initiative has established the Pan African Universities with five institute; Space Sciences; Life and Earth Sciences (including Health and Agriculture); Basic Sciences, Technology and innovation; Water and Energy Sciences (including Climate Change); Governance, Humanities and Social Sciences; to complement the Member States in building critical mass of expert with a link to the industrial need of the continent. There are also 19 Centres of Excellence in Africa financed by the World Bank in 2014, the main aim of the Centres is to equip young Africans with new scientific and technical skills in relevant disciplines in order to produce young graduates for Africa's development. The award of scholarship training is viewed as incentive for building capacity in the desired field.

The policy reviews call on the setting up of Joint Council of Industry and Higher Education with the aim of having common understanding and approach, knowledge sharing, developing appropriate technologies, capacity building, mobility between industry and academia..

OBJECTIVES:

- Build critical mass of MSc's & PhDs with special emphasis to industry;
- Establish National Joint Councils of Industry, Higher Education and Research in Member States; and
- Promote HR mobility between industry and academia..

ACTIVITIES:

At the AU level:

- Guidelines on review of the National Higher Education Policies

At the Member States Level:

- Setting up of Committee on review of national higher education policies; and
- Review of national higher education policies.

EXPECTED RESULTS:

- Clear guidelines developed and implemented by Member States
- Increased number of M.Scs. and Ph.Ds.;
- Industry and higher education institutions working together; and
- Increased mobility between industry and academia.

5. POLICY ON TECHNOLOGY TRANSFER, ADOPTION AND ACQUISITION

AIM:

Promotion of technology transfer, adoption and acquisition for wealth creation and market competitiveness.

BACKGROUND:

It is fact that developed world have garnered enormous economic returns from technological advancement, unfortunately, Africa is lagging behind due to the huge technology gap, this is evident in several UNIDO reports, since 1980, the Sub-Saharan Africa's share of global manufacturing value added remained constant at under 0.4 %. The exodus of human capital to Diaspora coupled with the inability of most Member States to attract its skilled human capital from the developed world further exacerbates the economic conditions of Member States. The over-dependence of African States on aid and grants could be the factor that slow and hinder the building of Africa's technological capabilities. Enormous wealth can be created through technology transfer and acquisition by identifying technology needs of our Member States, setting criteria for screening foreign investors with appropriate technologies and redeveloping the technology through reverse engineering could lead to economic prosperity for Africa.

With the increasing clamor for global demands for technology improvement, quality has become the watchword for the global market. Thus, it is not enough to develop technology based on what is parent country developed; improving the acquired technology is necessary for market competiveness. Doing this will require the assessment of commercialization potential of technologies and creating deliberate technology transfer initiatives for SMEs and others small companies whose budgets cannot support R&D. To this end, a well-designed plan is not enough, moving beyond the rhetoric is necessary.

The proposed policy on technology transfer, adoption and acquisition will map out dynamic strategies necessary to leap frog the AU Agenda 2063. It is to provide strategic directions for Member States, RECs and the Continent to enable them analyze and address their technological

requirements. The policy will set out guidelines for MS on how to access new technology, stimulate local technological development, Intellectual property issues, enhance productivity and value added processes, increase national investment in technology transfer, adoption and acquisition from both public and private institutions, human capacity building and increase market share for African products. For the RECs and Continental levels, the policy will address advocacy for the role of technology in Africa's economic transformation, establishing legal framework based on which African Union Member States would exchange their technological findings, capitalize on the Africa market size to achieve better agreements on technology licensing and production agreements and finally enhance Africa human capacity competitiveness in the field of technology transfer and acquisition.

OBJECTIVES:

- Facilitate technology transfer and acquisition between Member States;
- Develop action plans/policies aimed at integrating technology to national priority development sectors;
- Accelerate economic growth from commodity base economy to value addition economy;
- Lead the transition of Africa's economy to innovation led economy;
- Promote 'Made in Africa' products and harmonize Standards at all AU levels;
- Develop market gap analysis and technology commercialization plans;

ACTIVITIES:

- Draft /review policy by experts;
- Policy endorsement;
- Pilot policy in selected Member States;
- Training for Member States programs technology transfer, adoption and acquisition;
- Technology forecasting;
- Technology needs analysis; and
- Advocacy.

EXPECTED OUTCOME:

- Policy on technology transfer, adoption and acquisition developed;
- Training/capacity building materials for Member States;
- Report on technology forecasting;
- More African officials are aware/trained technology transfer, adoption and acquisition;
- AU Member States are informed on technology competences;
- More intra Africa agreements on technology exchange and transfer;
- Well established AU Office of Technology Transfer and Acquisition; and
- More African products introduced to African market.

6. AU POLICY GUIDELINE ON PROFESSIONAL AND PRACTITIONERS REGULATORY BODIES

AIM:

Encourage Member States to establish professionals and practitioners regulatory bodies while, the regional and continental bodies are established by RECs and AU.

BACKGROUND:

Strengthening professional associations is key action in developing human resources in multidisciplinary and multi-sectoral fields to ensure that consumers have access to high quality and cost-effective services. With the professional associations, workers are able to promote high standards of practice, advocate for the needs of both consumers and providers, form networks with other professional associations and liaise with legislative and regulatory bodies.

Building a sustainable, member-led professional association with the capacity to carry out a range of appropriate functions is best done in a stable environment with a strong membership body. In countries where there are political and governmental upheavals, gains made through governmental or donor collaboration can quickly be undone by changes that are out of the association's control.

A professional association or body is an organization, usually not-for-profit, which exists to represent a particular profession, promote excellence in practice and protect the public as well as the good standing of the professionals.

The policy will aim at strategies that are aimed at the advancement of strengthening professional association's internal structure and organizational effectiveness and strengthening activities that enable the professional associations to enhance the skills of its individual members and increase influence on external communities. Capacity- building efforts are appropriate to successfully strengthen professional associations.

OBJECTIVES:

- Strengthen the role of existing associations and professional bodies;
- Build capacities of the African professionals with updated technologies and trainings needs; and
- Enhance intra Africa mobility for professionals.

ACTIVITES:

At the level of the African Union:

- Development of policy guideline to assists Member States and RECs to develop their own national policies on professional and practitioners regulatory bodies;
- Data base on professional and practitioners regulatory bodies in the AU Member States; and
- Establishment of the AU sectorial professional and practitioners regulatory bodies.

At the level of the AU Member States:

- Development of the national policy on professional and practitioners regulatory bodies;
- Development of national data base of professionals and practitioners; and
- Set in place the systems and mechanisms to identify and ensure the implementation of the policy.

EXPECTED OUTCOMES:

A strong Professional and Practitioners Regulatory System is in place to:

- Ensure that the interests of the professions are represented and serve as the public voice of the profession at the national and continental levels;
- Protect the profession by guiding terms and conditions of employment and minimizing brain drain;

- Ensure that the public receives the highest possible standards of care by maintaining and enforcing training and practice standards, as well as ethical approaches in professional practice;
- Influence national policy development to improve standards within the specialties of the profession and ensure equitable access to quality cost- effective services;
- To carry out certification, registration or licensing of professional qualifications in a subject area. Membership in a professional body might be synonymous with certification, and may be a requirement for legal practice of a profession; and
- Ensure professional bodies act as learned societies for the academic disciplines underlying their professions, and have as part of their mandate to develop the art and science of that particular profession.

7. POLICY ON LIFELONG LEARNING

AIM:

Improve the long term competitiveness of African professional and practitioners.

BACKGROUND:

The right to learn is one of the human rights proclaimed in the UN Universal Declaration of Human Right in 1948 that everyone has the right to education and education shall be directed to the full development of the human personality. Lifelong learning may be broadly defined as learning that is pursued throughout life: learning that is flexible, diverse and available at different times and in different places. Lifelong learning crosses sectors, promoting learning beyond traditional schooling and throughout adult life (i.e. post-compulsory education).

It is well acknowledged that some of the universities curricula are irrelevant to the present and future needs of the socio-economic challenges of Africa. Also, employability of graduates has been a vexed issue in view of the poor quality of products from the higher education system. Quality of graduate produced does not match labor market demand or development needs. The result is that while graduates of many higher educational institutions in the continent go unemployed, substantial shortages of skilled labor persist. The challenge is to increase the capacity and supply of these disciplines through lifelong learning, invest in human resources, improve the link with employers to raise relevance and foster strong collaboration to raise quality of learning for life. They are many Africans who study various disciplines that are not of their choices or where their real talent does not lies. Hence, the lifelong learning presents the breath to change or adapt career and prosper.

However, for some African universities whose curricula are relevant to present and future needs of the continent, lifelong learning for the students and staff is imperative for their

competitiveness sustainability. The developed countries have integrated the concept into their national policy on learning since the term was first introduced in the Faure Report[17].

This policy can provide a response to the growing job vagaries across different sectors of the African economy as increasingly people will be changing jobs several times in a lifetime, and education can no longer be limited to offering a single specialization, but must develop each person's ability to change course during his or her lifetime, and to cope with any economic and social change. The policy will direct Member States to develop robust comprehensive lifelong learning implementation methodologies, open method of coordination in education and training, including self-education. Providing key competencies of lifelong learning for all has to become another policy priority. Critical thinking, creativity, inventiveness, problem solving skills, risk assessment and decision taking capabilities are potential for key competencies in any discipline or career. Increasing emphasis for all innovation is given to transversal competencies, such as learning to live and entrepreneurship.

The policy on lifelong learning will help to positively impact jobless situation of the Member States and to improve their professionals and practitioners competitiveness. This will in turn improve the job market size by incorporating the lifelong learning components into their curriculum at different institutions of higher learning. The lifelong policy views education as continued that it is no longer confined to a particular place and time and the scope of the informal learning whose potential today is vastly increased by the opportunities opened up by the new technologies.

OBJECTIVES:

- Improve the skills of African professional and practitioners to address the priority areas/sectors of STISA;
- Maximize the benefit from existing work force at the national and continental level;
- Career development and change; and
- Extend job market size and wealth creation

[17] Faure Report 1972

ACTIVITIES:

- Development of policy on lifelong learning;
- Formation of special bodies/organs of experts on learning and curriculum that focus on STISA priority areas;
- Development of short courses and capacity building programs that target specific areas of STISA priorities for the African professionals;
- Guidance and counseling on career adaption and changing advise; and
- Labor market analysis to inform policy makers.

EXPECTED OUTCOMES:

- Developed policy document on lifelong learning;
- Formed committees of experts;
- Set-up guardian and counselors;
- Document on prioritization and labor market analysis; and
- African professionals well trained in the STISA priority areas.

8. KNOWLEDGE EXCHANGE AND BRAIN CIRCULATION

AIM:

Introducing new and up-to-date knowledge to the African Knowledge Society and ultimately to post the African knowledge bank and process.

BACKGROUND:

Knowledge is much broader and transcends data and information. In many instances, knowledge includes judgment and experiences needed to take action. The concept of knowledge can be understood through its relationship to data and information. Data are merely raw facts collected from routine and daily social transactions and activities, and that data must be processed and structured into a meaningful, composite model of understanding to become a body of knowledge[18]. Once information is created, one is therefor able to filter it through a relative model of understanding to become a body of knowledge. Thus knowledge is created only as information, but is interpreted and evaluated from a contextual mental outlook. There are quantum of knowledge produced in Africa from traditional to modern, scientific to technological, social to economic, lexical to linguistic and many more but most of these knowledge are best of cases stored and kept in archives. In most cases, it is never being shared or exchanged with the next door.

In the 21st Century the global economy is much concern about knowledge production and ideas generation which are critical to long-term competitiveness; yet this African generation as well as others drained rapidly into it has resulted in decay in Africa's knowledge production and harness. This stanch on a growing determination to integrate the African Diaspora where the African Union (AU) has formally recognized the African Diaspora as a key player in the development agenda of the continent. In 2003, the AU amended its Charter so as to "… encourage the full participation of the African Diaspora as an important part of the continent in an effort to curtail

[18] Parikh, M. (2001) Knowledge Management Framework for High-Tech Research and Development' Engineering Management, 13(3):27-33

brain drain. Several solutions were offered and tabled but none seems to be working well because of the multifaceted problems that need to be approached holistically.
Harnessing knowledge is essential to the ability of organizations; countries and nations to change adapt and seize opportunities. For Africa to compete globally, it is imperative that it not only has access to global knowledge, but more importantly, it needs to harvest and harness existing knowledge that developed locally or by its Diaspora. This programme is composed of two main projects namely development of a policy on Brain Circulation and the establishment of the African Union network of Sciences.

8.1. POLICY ON BRAIN CIRCULATION

AIM:

To attract African Diaspora endowed with experience and talent to post their skills and knowledge by contributing to the African pool of knowledge and boosting the human and intuitional capacity of their fatherland.

BACKGROUND:

For several years brain drain has been a challenge for Africa and was considered to be an impediment to Africa's growth. Between 1985 and 1990, more than 60,000 African doctors, engineers and faculties have gone to the North and since 1990 more than 20,000 highly qualified Africans have been leaving the continent every year. The brain drain cost for Africa was estimated to be 4 billion dollars a year[19].

To build a future for Africa, it is necessary to mobilize presently any of its resources and particularly its human resource that is the fulcrum of knowledge production and consumption. This policy looks at how these problems of brain drain can be harnessed positively for Africa by developing different platforms and mechanism to contribute effectively to the development of the continent. It was envisaged that organizing visiting home programs and relocation grant for

[19] Achievements and Perspectives 2010 Edition, International Institute for Water and Environmental Engineering

diaspora will enable them settle at home while others are sister university programs and bilateral agreements will go a long way.

OBJECTIVES:

- Strengthen the Africa competitiveness by introducing new blood of talented human capacities
- Link the African Diaspora with their fatherland for the benefit of the African knowledge society;
- To introduce a new dimension of cooperation and mutual benefit of the African Diaspora scientists and the research institutions in Africa;
- African scientists in Diaspora are integrated with their fatherland and well informed on the development challenges in Africa

ACTIVITIES:

At the level of the African Union:

- Interaction with the African Scientific Community in Diaspora to assess their needs and commitments;
- Development of data base on the African Scientists in Diaspora; and
- Development of Policy guideline to assists Member States to develop their own national policies.

At the level of AU Member States:

- Development of the national policy on bran circulation;
- Development of data base of the Scientists in Diaspora; and
- Set in place the systems and mechanisms to ensure the implementation of the policy.

EXPECTED RESULTS:

- African Diaspora participate actively in Africa's socio-economic development;
- Increased Africa home production of knowledge;
- Leveraging the quality and quantity of human resources in the STI domain; and
- More recognition to African Universities and Research Institutions.

8.2. AFRICAN UNION NETWORK OF SCIENCES

AIM:

To create conducive platform to utilize the talent of African Scientific Community (home-based and diaspora) in addressing problems and challenges, and to allow them to recognize the diversity of its knowledge society in order to benefit from it.

BACKGROUND:

The African Union Network of Sciences is a virtual network that involves a wide range of individuals working together to address the African science and technology development challenges. It is a platform where African Scientist, Engineers, Technology Developers, Innovators and Inventors will be able to interact, cooperate, exchange information/knowledge and complement one another in research and academic work. It is also an innovative way to enhance brain circulation and bridge the African based Scientists and those in the Diaspora to address Africa's Challenges.

The HRST developed a study on the existing networks within Africa and Diaspora, the study revealed the existences of a large number of societies in the continent and also at the regional level. According to Tebeje[20], to date, 41 virtual networks in 30 different countries have been identified. Six of these are African, including the South African Network of Skills Abroad (SANSA) with members in 68 countries. It was also found that most of the existing networks and societies are established by individuals or by a cluster of national societies in the AU

[20] Tebeje A. Brain drain and capacity building in Africa. International Development Research Council (IDRC), 2005.

Member States with the support of international organizations. The study shows also that a large number of these societies have a limited number of membership and only few response actively to their mandates, and they do not have governments' official mandate. It is well acknowledged that the small scale of African scientific output is as a result of lack of adequate research infrastructure: laboratories, data processing centers, bio-banks, willingness to share facilities, and other brick-and-mortar facilities needed for research are major constraint. A survey on Africa's cooperation on HIV/AIDS research work shows that only five percent of the articles are produced in collaboration between two or more African countries despite they are most hit by the epidemic[21].

There is no doubt that resources are scarce and building monumental structure for development draws resources beyond our stretch. Development of model cost effect and sustainable structure for the development of science is pertinent to Africa. In consonance to this, there is need to ensure the presence of qualitative and effective network of sciences, a network that is able to unify, revitalize and integrate our scientific community to respond to our development challenges. It is imperative for the African Union to set up the African Network of Sciences. A network that considers all the existing resources/initiatives (Societies/Networks) to avoid any wastage of resources and/or duplication of efforts, this is in unison to complementarities.

OBJECTIVES:

- Facilitate access to up-to-date information;
- Foster knowledge production and sharing;
- Update the scientific knowledge in Africa;
- Create forums for discussion and interaction;
- Enhance intra-Africa research;
- Bridge the African scientists in Diaspora and at home by introducing a new positive dimension of brain circulation;
- Create an enabling environment/tool for the friends of Africa to contribute to Africa's socio-economic development; and

[21] Solomon Nwaka, Joint Technical Symposium by WIPO/WTO/WHO, June 2013 Thomson Web of Science, UCINET

- Promote publication sharing and open access.

ACTIVITIES:

- Conduct a survey on the existing scientific networks, virtual/physical and to request for their members information and lists;
- Develop the Network portal, modules, data base and digital library;
- Functionalization and publicity of the Network; and
- Continuous improvement and sustainability of the network.

EXPECTED OUTCOMES:

- Established digital library and electronic information portal that will serve as a foundation for information and knowledge exchange among scientists;
- Enhanced and improved accessibility to scientific information resources using modern communication channels;
- Promotion of the establishment of virtual/ digital platforms at Member State levels;
- Increased research collaboration and information sharing among scientist, and researcher;
- Developed partnerships and cooperation with information repositories likes libraries, publishers and research institutions; and
- Developed online training courses on scientific research and affiliated fields on the virtual platform.

9. POLICY ON RESEARCH OUTCOME COMMERCIALIZATION

AIM:

To change Africa's entrepreneurship and enterprise land scape by addressing the demands and ambition of its entrepreneurs.

BACKGROUND:

The prime explanation for the success of today's advanced industrial countries lies in their history of innovation along different dimension: institutions, technology, trade, organization, and the application of national resources[22]. The industrialized countries were able to effectively exploit research results and have long been recognized them as a critical driver of their competitiveness, enterprise, and more especially SMEs. However, Africa realized such competitiveness but was never able to put appropriate systems and mechanisms to commercialize research outcomes from its scientific community for the benefit of the continent. The disconnect between African scientists and industries is that several publication of scientists are laying parlor on shelves and rarely looks for patents, commercialization and entrepreneurial aspect of the outcome which is the rationale for the policy.

Patent is a challenge in Africa as many of the researchers are not well enlightened about it while entrepreneurship is believed to have been divorced from science. It can be attested that majority of the scientists in Africa lack the capacity and know-how on science entrepreneurial skills. The research outcome commercialization has been a subject of discourse in various African scientific fora for decades; various solutions have been offered to ameliorate the predicament. The central approach of the policy is to base on the triple helix model of innovation, with converging institutional spheres of academia and the industry.

[22] Calestous Juma & Lee Yee-Cheong (2005) Innovation: Applying Knowledge in Development. Millennium Project

The first dimension of the triple helix model is internal transformation in each of the helices, such as the development of lateral ties among companies through strategic alliances or an assumption of an economic development mission by universities by establishing secretariat or office for technology transfer. The policy will dwell on support for Member States office for technology transfer through the continental Office for Technology Transfer and Acquisition (OTTA) or the existing Centre for Entrepreneurship Development at the national level. Then university institution will not be viewed for only knowledge production but will in turn develop the capacities in entrepreneurial skills.

The second is the influence of one helix upon another, for example, the role of the government in instituting an industrial policy, research and development (R&D) policy at universities, etc. The policy here will attend to key issues by directing the industries to link with the universities or develop private research centre that will employ scientist to carry out research with the aim of improving products and services. On the other hand, the national R&D policy will address key issues by facilitating and managing the disclosure and licensing of inventions with commercial potentials. It will also encourage industry targeted research and broadening the span of technology transfer etc.

The third dimension is the creation of a new overlay of trilateral networks and organizations from the interaction among the three helices, formed for the purpose of coming up with new ideas and formats for high-tech development that will propel socio-economic development of the continent. There is need for a strong national enabling environment infrastructure to support the commercialization of research results in the Member States of the AU.

OBJECTIVES:

- Develop a smart partnership between private sectors and R&D institutions;
- Networking the African research centres and the African entrepreneurs;
- Identify financial systems and laws needed to promote entrepreneurship and enterprise;
- Address the gaps in existing education policies to introduce a new dimension of entrepreneurship development/capacity building; and

- Introduce the concept of local market protection and advocate for made in Africa (Nationalism & Pan Africanism).

ACTIVITIES:

At the level of the African Union:

- Development of an AU guideline policy on policy research outcome commercialization; and
- Advocacy campaign and capacity building to Member States on the policy development

At the level of AU Member States:

- Development of national policy research outcome commercialization;
- Development of local market;
- Establishment of Network of sciences;
- Setting up of joint industry high education council;
- Establishment of CPDEE; and
- Entrepreneurial capacity building program..

EXPECTED RESULTS:

- Developed policy;
- Increased local market size with local products;
- Established network of sciences;
- Joint industry higher education council established;
- Established CPDEE; and
- Many entrepreneurs produced.

10. AU POLICY ON INCLUSIVE INNOVATION

AIM:

Africa to utilize inclusive innovation as the driving force for its competitiveness and market access and to recognize the vital role of Inclusive Innovation in addressing the Africa's community challenges and needs.

BACKGROUND:

Innovation is a process by which inventions are produced, which may involve the bringing together of new ideas and technology, or finding novel application of existing technologies which generally means developing new ways of doing things in a place or by people where they have not been used before[23]. Inclusive innovation is any innovation that leads to affordable access to quality goods and services for the poor on a sustainable basis, serves a real need, effective and with extensive outreach. It is an opportunity for wealth creation by directing innovation to address the needs of the base of the consumer pyramid which is about 80% of the population in the world, the percentage may be greater in Africa.

Realizing that advances in technology typically delivered desired products in a ready-to-use packaged form in their appropriateness and are easy to market. It is fact that it has provided a crucial stimulus to a national growth but their benefit to the poorest communities has often limited benefit even if it is of direct value to the poor, are unaffordable. Not only that, the last decades prove that it is hard or impossible on this terrain for Africa to compete with the developed world on advanced technologies.

The policy is to connect excluded populations (consumer base of the pyramid) to a nation's innovation system. It complements frontier innovation by increasing the purchasing power; market size; and enhancing income-generating opportunities for the poor population. The policy included an integrated national inclusive innovation and required institutional systems with a dedicated fund to support inclusive innovation including private risk capital for pro-poor

[23] Gordon Conway and Jeff Waage ' Science and Innovation for Development ' 2010

solutions. The policy will align the mandates of public research system to channel the very best technical and scientific expertise towards inclusive innovation, and address the issue of collaboration with national, regional and global STI organizations to leverage global talent, technology and resources.

The systems will be supported by robust mechanism to facilitate the implementation by leveraging on incentives to strengths its comparative advantages on all stakeholders, the private sector (micro-financing, tax exemption, corporate social responsibilities etc.); dedicated support to grassroots innovators to deepen and expand their innovation capacity by recognizing and awarding a game changing inclusive innovations that is targeted specifically on encouraging risk taking, experimentation.

The system incorporated an independent and regular monitoring and assessment of policy and programs to maximize efficiency and impact, and benefit from lessons learned.

OBJECTIVES:

- To link innovation cycle to the needs and demands of the base of the consumer pyramid;
- Advocate inclusive innovation among the scientific and entrepreneurs communities;
- Recognize the inclusive innovation as a wealth creation tool at all AU levels;
- Encourage private sector to champion inclusive innovation in Africa; and
- Enhance market integration/protection at the AU level.

ACTIVITIES:

At the level of the African Union:

- Policy development (which include the following sub activities: drafting the policy, reviewing and consultation meeting with the relevant stakeholders, endorsement of the policy by the relevant AU bodies);
- Capacity building for Member States officials on inclusive innovation; and

- Advocacy programs on inclusive innovation and market protection and integration within the AU Member States.

At the level of AU Member States:

- Coordination meeting on the need for the integration of the policy on inclusive innovation;
- Community, social and economic needs assessment to identify the priority sectors for implementation of the integration of the policy of inclusive innovation to national development plans;
- Set in place the needed systems and mechanisms identified under the policy to encourage the participation of public institutions, private sector, and community inventors; and
- Advocate for locally made products and those made in Africa for market protection.

EXPECTED RESULTS:

- Inclusive innovations more recognized as Africa's potential for economic growth and transformation;
- More recognition for the African research and innovation community outputs by their respective societies and the world at large;
- Africa's private sector invest more in inclusive innovation and products;
- More market share for African products on the national, continental and world markets; and
- African society that is well enlightened on the needs to protect our local/African markets by leveraging 'Made in Africa' products.

11. AU GREEN INNOVATION POLICY

AIM:

To maximize on the benefits of Green Technology and Innovation in Africa and the need for the continent to participate actively in the green economy by leveraging on the opportunities of new industrial era of wealth creation and development.

BACKGROUND:

This stem from the realization that the first industrial revolution was only centered on consumer needs but not the environment. This gave rise to burning of fossil fuel with its adverse consequences on the environment that lead to climate change and global warming. In this era Africa was left out which made it to be consumer economy despite its enormous raw materials that never been utilized to recognizable level for creating a developed society. Contrarily, it resulted in under development of the continent and conspicuously its resources exploited by colonial masters for the development of Europe and other places[24].

Larger percentage of the carbon emission was emitted by developed world and in the year 2000 the Kyoto Protocol on climate change estimated that Africa produced less than 4% of the global emission and was exempted from emission reduction but to brace up for adaptation. They are many African who are of the view that Africa should not go for green innovation/economy rather to use the cheaper carbon emitting technologies to grow the continent. However, scientists and technologists are of the view that green technologies presents far more benefits to Africa despite its initial plummeted cost, particularly on its economics, environment and social benefits, since it's an opportunity for Africa to participate actively in the green era of development.

The green-innovation is a compound word and has several definitions and its definition is determined by suit for purpose on the context of situation. The creation or implementation of new, or significantly improved, products (goods and services), processes, marketing methods,

[24] Walter Rodney (2000) How Europe Under Developed Africa

organizational structures and institutional arrangements which – with or without intent – lead to environmental improvements compared to relevant alternatives[25]' it is a new concept of great importance to business and policy makers. The global thinking has moved ahead to include green to the growth of nations, this requires breaking away from resource intensive growth models into a more sustainable development patterns that include the marginalized in all the development process.

The recent survey carried out by STRC on African Union Member States' policy on green innovation showed virtually nonexistence of such policy in most of the Member States while some are imbedded in their STI policies[26].

The fundamental of the AU Green Innovation policy will be based on the need analysis. However, the policy will consider the broadness of the fields and specialty that green includes. The cross cutting field of energy, transport, agriculture, manufacturing, solid minerals, housing, tourism etc., the broadness will compel the Member States to prioritize the green innovation on the areas of their needs taking into cognizance the available raw materials, human capital, markets and other factors that are relevant for immediate implementations.

The policy will dwell on the short-term cost, the key benefits of moving towards a green innovation and economy in the medium to long-term, including wealth creation, employment, poverty eradication and economic prosperity as well as ensuring environmental sustainability.

The system is geared towards turning resource constraints and climate crisis into economic opportunities that generate double dividend (increased growth with reduced environmental impact) by improving efficiency of resource-use and increasing investments in natural capital through foreign direct investment. The mechanisms inherent for the implementation of the policy will consider incentives, loans, tax exemption, etc.

[25] OECD 2009
[26] STRC 2013

OBJECTIVES:

- Introducing Green Innovation as new opportunity and challenge to the African scientific community;
- Highlight the international trends on Green Innovation and to identify African priority sectors;
- Identify financial mechanisms to integrate green innovation into national financial/economic systems; and
- Africa community focuses on Green Economy.

ACTIVITIES:

At the level of the African Union:

- Policy development (include the following sub activities: continental needs assessment on green economy and green technology, drafting African Union Green Innovation Policy, stakeholders consultative meeting, reviewing and further consultation meeting, validation of the policy, endorsement of the policy by the relevant AU bodies);
- Capacity building for Member States officials on green innovation; and
- Advocacy programs on green innovation, market access and integration within the AU Member States.

At the level of AU Member States:

- Coordination meeting on the need for the integration of the policy on green innovation;
- Market needs assessment and identification of priority sector for implementation of the policy into national development plans;
- Formation of inter-sectoral committees and meetings on modalities of implementation; and
- Raising awareness on the need to use green products and green consciousness.

EXPECTED RESULTS:

- Policy document on African Union Green Innovation;
- Document on needs assessment of green economy and green technology;
- AU policy decisions on Green Innovation;
- Trained experts on Green Innovation;
- Meeting documents on coordination and integration of Green Innovation;
- Formed inter-sectoral committees and meeting reports; and
- Increased use of green products and raised consciousness on green issues.

12. NATIONAL STRATEGY ON CREATIVE THINKING AND INNOVATIVE CAPACITY BUILDING

AIM:

To introduce creative thinking and innovative capacity building to the African education system at all levels.

BACKGROUND:

It is a concern that many students in Africa who do study science are not taught to think like scientists – to question orthodoxy, to analyze critically or creatively to find their own ways of tackling problems, to appreciate the thrill of discovery. Instead, memorization and rote learning dominate. It is imperative to spawn interest in science through entertainment and interactive learning programme, exploring innovative capacity, building self-confidence or initiative taking skills.

There are many questions and requirement to teach creativity, as there is no direct route to it. Creativity may not be taught 'directly', but educational practice can provide the means, opportunities and a fertile environment for the creative mind to flourish. Both adult and children can be creative and in principle, everyone can be creative provided they have three factors: skills, environment (including means) and motivation.

This strategy will look into the three factors necessary for developing creativity in people including creative learning space and in a school curriculum that enhances creativity.

- The National Policy on Higher Education and Research, the National Policy on Secondary and Basic Education shall be reviewed to include or direct creative thinking as a subject and provide/device teaching in all school subjects are creative and can be taught and learnt creatively;

- All environments can create and offer multiple, albeit very different, opportunities for students and teachers to reflect creatively. Creating a caring and encouraging learning environment where students feel free and safe to experiment with new ideas and take calculated risks; and
- Create the context of teacher capacity gradual improvement focusing on improving practices while uncovering the best specific ideas.

OBJECTIVES:

- To develop innovative thinkers and inventors; and
- To develop competitive work force on African market.

ACTIVITIES:

- Setting up special bodies for the review of National Policy on Higher Education and Research, the National Policy on Secondary and Basic Education;
- Development of national strategy on creative thinking; and
- Advocacy on the strategy.

EXPECTED RESULTS:

- Developed/reviewed curricula with creative thinking;
- African graduates more creative; and
- More innovation and inventions produced by the African research community.

13. POLICY ON POPULARIZATION OF STI

AIM:

To build public understanding, confidence and raising awareness on Science, Technology and Innovation as a driving agent for social and economic progress for Africa and regional integration.

BACKGROUND:

Popularization carries one of the two meanings. It means the spread of knowledge on science and technology to the masses, but it may also mean the acquisition of new science and technology for improving one's social and economic life. Here the STISA 2024 is a continental science and technology strategy with six priority areas including key domain further fragmented into implementation phases with flagship programs, projects and research programs.

It is imperative to inform the public as well as other stakeholders about the issues of science and technology that are being addressed by STISA 2024 or intends to be addressed. Within the AUC-HRST and its Divisions and Regional Offices, have been taken the lead on number of programmes and projects from the implementation of Consolidated Plan of Action for Science and Technology for a number of years in order to alert the public on key issues, and recognizing contributions of individuals and institutions to STI such as *African Union* Kwame Nkrumah *Scientific Awards, African Science and Technology Scientific Renaissance Day etc. In furtherance, the policy on popularization will advocate for every flagship programme to have a component of advocacy.*

It is understandable that popularization of science and technology anywhere was to be raised in the context of a particular culture and a set of economic conditions. Africa is an agrarian community that produced subsistence economy; the popularization must be addressed in terms of creating a general scientific culture. The importance of S&T to individual lives as well as national development, science instructors or educators to include in their responsibilities the need to inform people of the ethical as well as environmental problems caused by modern STI in order to deal with the negative feelings of populace. This will make all stakeholders to better appreciate the subject.

OBJECTIVES:

- To popularize and promote science, technology and innovation in AU Member States;
- Promote public interest, understanding, participation and recognition of the science, technology and innovation role; and
- Establish support and lobby groups for more allocation to STI in the national budget.

ACTIVITIES:

- African Union Kwame Nkrumah Scientific Awards;
- African Science and Technology Scientific Renaissance Day ;
- African Union STI Community Award (to be given to R&D Community Hub);
- African Union STI Journalist Award;
- Media communication action plan and campaigns for the popularization of science, technology and innovation in Africa involving media;
- Introducing African Ambassadors on STI initiative;
- Congress of Pan-African Parliament Workshop on Science and Technology; and
- Congress of African Scientists and Policy Makers.

EXPECTED OUTCOME:

- More recognition to STI by the African policy makers;
- Increased funds allocation for STI; and
- Action plans and priority areas of the STISA 2024 recognized and integrated to national development plans and regional strategies of the AU Member States.

14. JOINT COUNCIL OF INDUSTRY AND HIGHER EDUCATION/ RESEARCH

AIM:

To provide a platform among researchers, research institutions, higher educational institutes and industries for cross-fertilization of ideas and eventually help in the commercialization of research outcomes by creating new technologies and products in Member States.

BACKGROUND:

Research, education and industry are inextricably linked in pursuit of any development agenda. Unfortunately in Africa there seems to be a sharp disconnect between R&D and industrial needs. What is worsening this situation is the fact that the higher educational curriculum are either outdated in meeting the current industrial needs or in some cases not available at all to resolve the need of the priority sectors. Also, most Member States have consciously or unconsciously neglected Polytechnic and Vocational Education in building middle level manpower, which the developed economies thrive on for growth.

In terms of R&D expenditure, the Africa Innovation Outlook II 2014 indicates that R&D expenditure in most African countries is still far below the 1% GDP which is the current proposed target for AU Member States (Addis Ababa Declaration 2007). Whilst Governments of Member States remain the major source of funding for R&D in Africa, under-investment in R&D by the private sector is pervasive across the continent. If this trend continues, Africa may not be able to catch up with the developed countries in the next industrialization era, which offers Africa a perfect opportunity to be a force to reckon within the area of industrialization.

Thus, for Africa to take up its position in the second industrial revolution it is essential to harness all efforts in Research and Development by linking the Industry/Higher Education/Research communities. The Joint Council of Industry and Higher Education/Research shall be established in Member States to help formulate policies and also to review higher educational curriculum with emphasis to postgraduate studies and linked to national priority areas and industry. The council is providing needed support system by encouraging Member States to establish Higher Education Trust Fund, curriculum

development/updating, exchange programs. It also has to facilitate HR mobility from industry to academia and vice versa.

It shall serve as a coordinating body among firms, industry, universities and research centres for cross-fertilization of ideas in Member States.

OBJECTIVES:

- Introduce joint research areas on the priorities of industry;
- Empowerment/improvement of research facilities in University/Research Institutions;
- Maximize the number of Ph.Ds and MScs research works, which response to the national industry challenges;
- Seek for innovative ways/alternative resources to fund R&D in university to maximize national R&D expenditure; and
- Promote HR mobility between industry and academia.

ACTIVITIES:

- Baseline study on higher education industrial needs assessment in Member States;
- Review higher education policies;
- Expert consultative meeting in Member States;
- Higher educational quality assurance monitoring;
- Develop improved impact assessment procedures; and
- Set up higher education STI research trust fund and grant system by national industry.

EXPECTED OUTCOMES:

- A functional Joint Council of Industry and Higher Education in Member States;
- Job market and industry needs assessment reports;
- Quality assurance monitoring reports in Member States;
- Sustainable education STI research trust fund and grant system established;

- Introducing more African products to the African market; and
- More graduates align their studies to the industry needs

15. OFFICE OF TECHNOLOGY TRANSFER AND ACQUISITION (OTTA)

AIM:
Narrowing the technology gap between Africa and the globe and to introduce African solutions to African problems.

BACKGROUND:

Technology transfer is a set of processes that converts ideas, procedures resulting from R&D to product prototypes, then to improved product, on the other hand technology acquisition is the purchase or acquiring of a technology from one nation (supplier) to another (receiver), in this instance the receiving nation identifies the technology consistent with industrial needs at the time of purchase and initiates negotiations. After purchase, the onus lies on the receiving nation to be able to assimilate and diffuse this technology by adapting to local needs and upgrading it through reverse engineering and other techniques.

Africa is currently inundated with myriad of social and economic challenges, whilst several efforts have been put in place to confront these challenges in the past; little progress has been made in resolving these challenges. Effort such as policies on S&T and institutions have been put in place to boost technology; however most of these have culminated themselves into semi or dysfunctional institutions due to fragmentation and suspicion among key stakeholders.

It is a well-acclaimed fact that Africa has not been able to match up with the competitive market that has been brought about by technology improvements. These have further bolstered the continuous deterioration of most Africa's economies. We need therefore to develop the human capital by building our technological capabilities to be able to cope with the pace and subsequently chart the course of Member States to STISA-2024 and AU Agenda 2063 to catapult the development of the continent. The Office of the Technology Transfer and Acquisition is to bridge the technology gap between Africa and the developed world and to introduce African solution by championing the industrial developmental needs of the Member

States. The Office shall be established at all AU levels with appropriate structures to anchor its implementation and sustainability. At the continental level, the OTTA shall oversee the development of the Technology Transfer and Acquisition (TTA) policies, address Intellectual Property related to TTA and create the African technology market place and exhibitions. It also provides adequate mechanism like financial schemes e.g. tax incentive for purchase of capital equipment and budgetary allocations from governments, Higher Education Needs Assessment for TTA (Ph.Ds./ M.Scs.), and technology needs/gaps analysis across Member States. The impetus for Technical and Vocational Education that seemed to be waning in most Member States is to be reinvigorated by the Office.

OBJECTIVES:

- Facilitate technology, transfer and acquisition between Member States;
- Develop action plans/policies aimed at integrating technology to national priority development sectors;
- Accelerate economic growth from commodity base economy to value addition economy;
- Lead the transition of Africa's economy to innovation led economy;
- Promote 'Made in Africa' products and harmonize of standards at all AU levels;
- Develop market gap analysis and technology commercialization plans;

ACTIVITIES:

- Conduct baseline study on technology transfer needs;
- Set a body to develop policy on Technology Transfer and Acquisition;
- Review draft policy by experts;
- Policy endorsement;
- Pilot policy in selected Member States;
- Technology forecasting;
- Technology needs analysis; and
- Advocacy.

EXPECTED OUTCOME

- A functional Office of Technology Transfer and Acquisition;
- Policy on TTA developed; and
- Report on technology forecasting and needs assessment.

16. NATIONAL CENTRE FOR DEVELOPMENT& PROMOTION OF ENTREPRENEURSHIP AND ENTERPRISE (CDPEE)

AIM:

Build entrepreneurship capacity.

BACKGROUND:

An entrepreneur is a person who has the capacity to identify a business opportunity in his/her environment and device a means of meeting the needs. Entrepreneurship has long been known to be vehicle on which economic development thrives. It is believed that in every economy the thriving power is centered on small and medium scale businesses that occupy the middle class.

Most of the AU Member States seek support from developed countries for even the simplest basic necessities of life, which by a dint of little innovation could have been developed by these Member States from mere simple to more complex technologies. Often, African research scientists do not have the nuance of entrepreneurial skills hence concentrate on bench work research with the view of publishing research papers and articles that are laying parlor in shelves. The researchers lack knowledge in patenting and its related legalities which is a key component of science entrepreneurial skill.

Similarly, African educational institutions churn out graduates each year, most of these students particularly MSC and PhD students conduct researches with valuable outcomes which eventually end up in shelves with no effort of commercializing the outputs. Conversely, some entrepreneurs in Africa may have abilities to identify gaps and ways of filling these gaps, but have little or no knowledge on how R&D can transform their companies.

The CDPEE will spearhead major entrepreneurship capacity building that borders on lifelong learning, career changing opportunities, creative and innovative capacity building, professional capacity building among others in the continent and the Member States. It will also work on the potentials of commercializing research outcomes and promote entrepreneurship. The trade and

commercialization policies recognized the unparalleled importance of the CDPEE to economic growth and national development and realizing that most Member States have such offices or institute but there is need to review the mandates to be more competitive and produce the desired skilled personnel.

The mandate of the CDPEE is to build the capacities of scientist, engineers, technology developers, innovators, inventors, researchers, and entrepreneurs among others. The Centre for Entrepreneurship Development is to be established at the national level or where it exist it will be strengthened to meet current global requirements with the aim of building the capacities as well as promoting entrepreneurial activities.

OBJECTIVES:

- To promote entrepreneurship at the Member State level;
- Establish network the enterprises and entrepreneurs in national level; and
- Identify financial mechanisms to commercialize research outputs.

ACTIVITIES:

- Establishment and/or functionalization of the CDPEE;
- The analysis on the needs and gap of entrepreneurial skills; and
- Promotion of entrepreneurship skill development.

EXPECTED OUTCOME:

- Functional CDPEE;
- Increased capacity of skilled professionals; and
- More African products in the African market.

17. AFRICAN UNION TRADE OFFICE (AUTO)

AIM:

Strengthen intra-Africa trade.

BACKGROUND:

Since the post-colonial period the Organization of African Unity now African Union has made several efforts to exploit the continent's potential of trade for development. Trade is widely accepted as a fulcrum for economic growth and development but has not served as potential tool for rapid development of Africa.

Against this back drop, the African Union recommendation of the 6th Ordinary Session of the AU Ministers of Trade to fast-track the creation of a continental Free Trade Area (FTA), the decision of the AU Assembly of State and Government in January 2012 with a theme of "Boosting Intra-African Trade" among many others came up. While the regional initiatives on trade such as the Common Market for Eastern and Southern Africa COMESA, Economic Community of West African States ECOWAS Protocol on Free Movement of People and Goods etc., are geared toward rebuilding the continent trade.

Despite the enormous effort and programme put in place intra-Africa trade stands at around 10% compared to 60%, 40%, 30% intra-regional trade that has been achieved by Europe, North America and ASEAN respectively[27]. It is clear that African Union Member States do not trade much with each other, that lack of synergies and complementarity of their economies have not provided the greater market integration desired. These failures of the African trade are attributed to size, structure and direction.

The advent of STISA-2024 and its finite element policy analysis viewed the landscape of intra-Africa trade from the perspective of commercialization of R&D outcome, value addition to raw materials, and STI product for market development. In order to boost investment in the

[27] AUC Action Plan for Boosting Intra-African Trade, 2012

development of STI SMEs, to increase the market size and economies of Africa, the intra-Africa trade has enormous potential to create employment, catalyze investment and foster growth in continent.

The African Union Trade Office (AUTO) will spearhead the intra-Africa trade, trade issues related technology and innovation, small and medium scale enterprise, trade negotiations, representing common views of the African Union in international forum among others. This could be the nucleus for the African Chamber of Commerce.

OBJECTIVES:

- To establish smart connection between production and demand at the AU level;
- To enhance intra-Africa trade in domain other than commodities; and
- Increasing the market size and opportunities for Africa's SMEs and Enterprises.

ACTIVITIES:

- Call for hosting of the AUTO;
- Development of the ToR for the hosting of AUTO; and
- Setting up the AUTO (ToR, body to oversee the inception process and procedure, establishment of the AUTO).

EXPECTED RESULTS:

- A functional African Union Trade Office;
- Number of SMEs on national and continental level are increased;
- Increased size of the intra-Africa trade; and
- Increased investments on STI and R&D at all the AU levels.

VI WAY FORWARD

The STRC recommends that a full pledge book of projects on this STISA-2024 phase be developed by Member States; RECs and AUC in due course. The development will look into categorization and clustering of the projects and programmes where it will give a detailed description of the projects; methodology and mode of implementation; the outcomes in short, medium and long terms; the budget breakdown; risk mitigation and management among others.

Before engagement in the implementation of STISA-2024, it will be advisable for the Member States and RECs to carry out baseline studies to identify the existing systems if any and to make justification for the needed institutions and projects to avail the required investment. Noting that self-investment by Member States and RECs show great level of commitment and will lead to attract more partner funds.

The AU Science, Technology and Innovation Strategy for Africa (STISA-2024) was endorsed as a continental framework for accelerating Africa's transition to an innovation-led and knowledge-based economy by the AU Head of States and Governments, Malabo Equatorial Guinea in June 2014

Towards the end of 2014 STRC have engaged in the development of a policy analysis for the 1st phase of STISA-2024 to ensure its smooth implementation. Against this backdrop, the STISA was subjected to critical analysis considering present, past and future based on the needs and gaps that yielded all the pre-requisite and required systems and mechanisms including policies and institutions needed were identified. The analyses were made also to ensure that Member States and RECs are informed on the systems needed for the domestication and implementation of the strategy.

The output of the analysis identified the policy gaps and institutional arrangements that may or may not exist in the majority of the AU Member States and/or its Regional Economic Communities, where 13 policies and 7 institutions were outlined

African Union Scientific, Technical and Research Commission
(AU/STRC)

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