©UNESCO/Sonia Bahri

Flagship 3: Harnessing STI and knowledge for the sustainable socio-economic development of Africa

Rationale and background

The world development paradigm has shifted to the knowledge based-economy informed by scientific evidence and data to solve challenges of basic needs (food security, access to clean water and energy, healthcare delivery), climate change mitigation, industrial competitiveness and socio-economic development. Science, engineering, technology and innovation (SETI) activities are becoming increasingly important for sustainable social and economic development and the formulation of policies in this field is critical in addressing these major development challenges. Many African countries have abundant natural and mineral resources and this wealth has created a huge foreign direct investment on the continent with half of its estimated 1 billion population under the age of 15 years. The World Bank estimates sub-Saharan Africa's growth to reach 5.2 % in 2014 and remain stronger than many other developing countries (WB Africa Impulse, 2014). Africa's unprecedented growing economies have created demand for national, regional and continental investment in research and innovation and infrastructure development.

In spite of these development trends in utilization of science, technology and innovation (STI) for socio-economic development and Africa's high economic growth forecast, many governments do not have a STI policy system and governance or the needed SETI capacity for it fast growing economic potential. The continent faces challenges of climate change with its adverse consequences on food and agriculture, water availability and disease and environmental disasters coupled with rapid urbanization and environmental degradation. Africa's capacity to mitigate climate change with its effects on basic needs and to transform its vast natural resources and latent human capability into value added products, processes and service requires the creation of a critical mass of expertise in SETI to drive the development agenda (Nairobi Ministerial Declaration, 2012). New SETI governance systems and policy instruments must be adequately designed to contribute to the UN Millennium Development Goals (MDG) and to foster the eradication of extreme poverty in preparedness for the post-2015 sustainable development agenda. The new AU Science, Technology and Innovation Strategy 2024 (STISA 2024) articulates the need to stimulate economic growth and create jobs by harnessing SETI as a key driver for Africa's sustainable development and to improve and promote intra-African trade through existing regional economic communities (RECs).

The ICT sector is a sizeable and strategically important sector as ICTs are today a vital economic sector in their own right. ICTs and Media and Information Literacy (MIL) play a fundamental role in giving people voice and access to knowledge, information and education and supporting the development of new skills and employment opportunities. Even more importantly, ICTs are today promoting the achievement of all three pillars of sustainable development: social development; economic development; and environmental protection.

ICTs and MIL play an important part in ensuring rights-based development.[1] They are empowering people to participate in enhancing local and national development. Around the world, ICTs are providing people with basic connectivity, enabling them to express themselves, exercise a voice individually or on behalf of their communities, learn from the experience of others and even vote electronically.

Although there has been a massive explosion in access to ICTs since the year 2000, with mobile cellular subscriptions fast approaching total global population[2], Internet connections and access to broadband networks continue to show a pervasive digital divide between the developed and developing world.

This proposed continental African programme to be implemented at sub-regional and regional levels seeks to achieve the following:

- Assist in the creation and enhancement of enabling policy environments in African countries for STI for sustainable development including the strengthening of the science, policy and society interface to advance equity and social inclusion. This will include harnessing of the full spectrum of sciences to advance Africa's sustainable socio-economic transformation and competitiveness as well as mobilizing sustainability science to address complex and interlinked global challenges in a trans-disciplinary way;

---

[1] The United Nations Groups on the Information Society (UNGIS) has proposed that ICTs as key enablers of development are fully recognized in the post-2015 development agenda, and has pointed out that "ICTs in general, and the Internet in particular, play an important part in ensuring rights-based development, especially enabling wider exercise of freedom of expression and press freedom, which in turn are critical to combating corruption, ensuring gender-sensitivity, deepening accountability, and promoting socially inclusive development." http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/wsis/ungis_joint_statement_wsis_2013.pdf

[2] The mobile cellular subscription penetration rates stand at 96% globally at the end of 2013, with the World Bank estimating that this means that around three-quarters of the global population now has access to a mobile phone

- Strengthen human and institutional capacity for education and training, research and innovation in science and engineering, as well as in the field of STI governance and policy, to create the critical mass of expertise including through UNESCO institutes and regional centres of excellence, and targeted activities in collaboration with a wide range of public and private partners and civil societies with special emphasis on using the power of ICTs, gender equality and least developed countries;

- Promote South-South, North-South and triangular partnerships and collaboration to enhance joint education and training, research and innovation, exchange of experts, internationally peer-reviewed systems for promoting quality of African Higher Education Institutions (HEI) and programmes with emphasis on strengthening the capacity of RECs such ECOWAS, SADC, CAEC and EAC in harmonizing and setting up regional priorities in STI policies and actions, providing leadership and guidance in leveraging STI as drivers for growth and development and developing common regulatory frameworks and mechanisms for action;

- Support career mentoring and development of innovation-hubs and networks with particular emphasis on empowering women in science and engineering and enabling the creation of an entrepreneurial culture.

This continental flagship programme aims to address challenges such as the lack of policy instruments and appropriate strategies, tools and indicators for good governance, STI and the lack of capacities to examine and reposition national innovation systems and to formulate and implement STI policy in Africa. It gives special focus to the participation of women and youth in knowledge production and the management of the STI systems and the creation of a culture of innovation and also raises the question of the "grey area" relating to the commercialization of the results of research and the weakness of the link between academia and industry.

Africa Flagship 3 also underlines the need to empower African societies through access to information and knowledge with a special emphasis on promoting communication development, policy and governance infrastructures, and capacity-building to advance the use of ICTs in all domains of competence of UNESCO.

Additionally, it aims to create the enabling conditions and policy environment for knowledge production and dissemination which will be the foundation for the use of science in managing Africa's natural resources and the environment, key to its socio-economic development. It builds on the strategic objectives 4 and 5 proposed in the Medium-Term Strategy (37 C/4) which aims at supporting Member States and regions in strengthening peace and sustainable development through the strengthening of STI and of their interface with policy and society.

The African continent needs to invest in ICT infrastructure to benefit from the contribution of ICTs and the Internet to economic growth, as well as associated strategic spill over effects on other sectors. This requires concerted effort and planning by policy-makers at the national level. Countries which fail to prioritize investments in ICT infrastructure and services may find themselves being left behind in the dawning digital economy. ICTs and the Internet – in themselves and as an infrastructural backbone for the media – can contribute to economic growth. A number of studies have found that ICTs are a major driver of economic growth, as well as improved productivity, reduced transaction costs and job creation.

Imperative to unleashing the development potential of digital tools and maximising the return on investment in ICT infrastructure for STI, economic growth and democratic development, is the parallel investment and incorporation of Media and Information Literacy (MIL) into national and regional policies and educational curricula. MIL empowers users to engage critically and ethically with the content to leverage the opportunities offered by nominal access to new technologies. Similarly, policies should be adopted to promote equal access and accessibility to ICTs and the Internet for all segments of society including for women and marginalised groups.

Furthermore, ICTs and MIL can power up media organisations to report on STI issues in a way that holds development policy-makers transparent and accountable to their electorates, thus ensuring active citizen engagement and participation.

Why UNESCO?

UNESCO is leading the Global Alliance of STI in Africa based on its mandate and experience in science education at all levels, TVET and higher education, as well as in STI policies and capacity building. UNESCO is in a unique position to provide guidance to countries and regions to adopt a systemic and integrated approach to STI. In 2012, UNESCO, together with the AUC, AfDB, UNECA and ADEA joined the efforts of many African Ministers of STI, Finance and Planning, and Education who committed themselves to support the higher education system and promote STI for youth employment, human capital development and inclusive growth. UNESCO will continue to lead and build bridges to enhance synergy, partnerships and collaboration based on best practices and lessons learnt from other continents and: forge alliances between member states and other UN agencies in 'delivering as one'.

UNESCO overarching priority of its 2014-2017 Medium-term Strategy has placed a great emphasis on contributing, together with relevant partners, to the implementation of the AU STISA 2024 and other main ministerial declarations and statements in order to build and strengthen STI systems for sustainable development.

Over the last decade, UNESCO has provided advice and guidance towards a better STI governance and policy and has assisted more than 20 countries in Africa, as well regional communities such as the ECOWAS, in the review and/or formulation of their national STI policy, strategies and action plans, using UNESCO's Global Observatory of STI policy instruments (GO→SPIN), which is a tool for mapping and analyzing national STI systems, as well identifying the gaps in terms of policy instruments and mechanisms that could ensure effective STI policy implementation. UNESCO is also working with African member states to build capacities for STI governance, by strengthening programmes and institutions that offer training in this field. A number of countries in East and Southern Africa and Small Island Development States (SIDS) are requesting UNESCO's technical support in building capacity in STI systems and governance and STI policy to increase member states' competitiveness. The time is now to harness the SETI potential for sustainable development of African countries and to put a monitoring and evaluation system to assess impact on improving the competitiveness of RECs.

The use of ICT in teaching, research and innovation and development of STI policy platforms will be key in this project. Such capacity building in STI will be clearly articulated and linked to national development objectives.

Within its mandate in Communication and information, UNESCO has provided policy tools, resources and capacity-building programmes to member states to build Knowledge Societies. UNESCO promotes the application of ICTs to enhance the quality of and access to education, builds scientific knowledge, promotes open access to scientific research results, and empowers local communities. The Organization is aiming to facilitate ICT accessibility including disabilities and Multilingualism promoted in Member States.

To strengthen Member States capacities to address the emerging challenges of the ethical dimensions of the information and knowledge societies, UNESCO has developed national information policy frameworks and encourages collaboration and sharing of experiences between member states. Information ethics being crucial for building Knowledge Societies, progress continues to be made by UNESCO in its efforts to support capacity building in the area of information ethics for tertiary education institutions in Africa.

Empowerment of people through Media and Information Literacy (MIL) is an important prerequisite for fostering equitable access to information and knowledge and promoting free, independent and pluralistic media and information systems. Information Literacy and Media Literacy are traditionally seen as separate and distinct fields. Through its Media and Information Literacy programme, UNESCO's mission is to engender media and information literate societies through a comprehensive strategy which include preparation of model Media and Information Literacy Curriculum for Teachers, the facilitation of international cooperation, development of Guidelines for Preparing National MIL Policies and Strategies, articulation of a Global Framework on MIL Indicators and setting up MIL University Network.

This proposal aims at strengthening STI policy analysis, design, implementation, monitoring and evaluation capacity in Africa by building on lessons learnt and creating the critical mass of expertise in STI to drive Africa's development with the following objectives.

Objectives:

- to strengthen the policy framework for knowledge production and STI systems;

- to increase institutional and human capacity to produce and disseminate knowledge;

- to strengthen the capacities of African societies to develop, monitor, make use of, and to critically assess knowledge and STI for development;

- to encourage the participation of youth and especially women in ICTs as regards their use and application in the context of socio-economic development and STI activities and research and development; and to strengthen commercialization of the results of research and links between academia and industry.

Main actions:

- Develop, review and harmonize knowledge production and STI policies and governance, at both national and regional levels;

- Support and mobilize existing African think-tanks both at regional and sub-regional level, for decision-making and STI development;

- Strengthen African higher education and research institutions, and research, development and innovation (RDI) capacity;

- Promote the twinning of institutions and exchanges of STI experts through North-South, South-South and South-North-South cooperation;

- Improve universal access to information and knowledge as well as build capacity in the field of ICT use in Africa;

- Ensure that more youth and especially young women participate in science, technology, engineering and mathematics education and careers;

  Develop African capacity in the preservation of documentary heritage.

Expected Results:

1. Establishment of national innovation systems undertaken and linked to STI policies and related governance and monitoring structures;

2. UNESCO-affiliated networks and networks of African institutions strengthened to provide leadership and guidelines on pertinent and strategic issues in all the areas of UNESCO's mandate in science;

3. Institutional and human capacities strengthened to build skills in STI policy-making, governance, innovation, entrepreneurship, technological forecasting, evaluation, negotiation, acquisition, transfer, distribution, internalization and basic knowledge in the management of STI systems;

4. South-South and North-South cooperation in STI policy and capacity-building in STI policies among African and other developed and developing countries enhanced;

5. Mathematics and physics hubs created for African young talent with an emphasis on women scientists;

6. Culture of innovation and science and technology promoted by mobilizing knowledge resources;

7. Member States empowered in building inclusive knowledge societies, creating the conditions for sustainable development and peace by promoting and using multilingualism in cyberspace, universal access and preservation of information, enhanced information and communication technologies (ICTs) skills, and open solutions;

8. Increased participation and active contribution of young Africans in the resolution of issues of local sustainable development and livelihood, through the development of dynamic mobile applications;

9. Preservation of documentary heritage for enhanced access to knowledge through Memory of the World.