Background and context

In the last decade Africa has experienced exceptional economic growth, with GDP rising by an average of 4.5% per year. However, productivity remains low, the movement to higher value goods and services is slow, and growth has been inequitable. The challenge that lies ahead is to ensure that the growth is inclusive, accompanied by a reduction in poverty and improved livelihoods, and sustainable. To achieve such a socio-economic transformation Africa needs a critical mass of human capital with science and technology competencies to drive the transition toward higher value products and services that can globally compete.

Improved capability in science, technology and innovation through holistic, strategic improvements in education and training are at the heart of adequately equipping the massive number of young people on the continent. Indeed globalization, technological advances, demographic pressures, social inequalities and the quest for sustainable development are creating a rising demand for policies and programmes that respond to innovation and labour market requirements, support youth transitions between education and the world of work, and promote poverty reduction, social inclusion and gender equality.

Effective strategies for building capability in science and technology have the potential to position Africa to address its most pressing development concerns by improving and increasing productivity in priority areas such as agriculture, infrastructure, health, energy, water and sanitation, sustainable development, etc. In order to make lasting progress, skills in science and technology need to be built across the continuum, from foundational skills to upper secondary, and technical and vocational education and training (TVET) through to higher education and research. If students are proficient in basic math and science by the time they leave secondary school, they have a better chance of pursuing science- and math-based courses at a higher level. Coordinated efforts at primary,
secondary and TVET levels to strengthen learning achievement in mathematics and a science are equally important.

Consequently issues of investment for STEM, support for entrepreneurs and Innovators, TVET and skills development for work and life are priorities that need to be taken into account in reviewing the status of the previous EFA agenda. It is also why science and technology, TVET, higher education and skills development are increasingly high on Member States’ policy agenda and central in the international policy discourse on education and training. All over the world, there is general consensus that investment in science and technology and a skilled workforce is key to a country’s competitiveness, inclusiveness and sustainable development. Conversely, a poorly skilled population, skills mismatches and gaps in the labour force are deemed costly as they translate into high unemployment and under-employment, particularly for the youth, economic disadvantages and political instability. These notwithstanding, the focus on science and technology, higher education and TVET were low on the previous EFA agenda in Sub-Saharan Africa.

Objectives

The overall objective of this priority area and related sessions is to identify key recommendation(s) for inclusion in the Kigali Statement and the Post-2015 agenda to build quality human capital in science and technology for Africa’s socio-economic transformation; and to strengthen the application of science and technology to solve Africa’s challenges, particularly in youth employment, food security, health, energy and climate changes. The session will address the issue of providing young people with a fair opportunity to succeed in their professional lives, through the development and implementation of efficient and effective education systems (mainly TVET and higher education) grounded in science and technology, engineering mathematics and innovation with the ultimate purpose of better integrating youth into the world of work; and leveraging partnerships with the private sector and other consumers of the output of training institutions in addressing this challenge.

Based on the above, and in the spirit of several regional initiatives of which the Plan of Action of the Second Decade of Education relating to SMT, Higher Education and TVET, the session will target the following specific objectives:

1. Reaffirm the critical role of TVET, tertiary education and S&T in Africa’s socio-economic development and reach consensus on its inclusion in the post 2015 agenda. To this end, the session will review progress in the implementation of previous initiatives aimed at fostering regional collaboration in the delivery of technical and vocational skills development, higher education for science and technology in Sub Saharan Africa, and drawn lessons to inform the post 2015 agenda.

2. Share country experiences, best practices and promising approaches and strategies for overcoming barriers to regional harmonization and transformation of national skills development systems as well as progress in girls and women’s access, interest, performance and participation in science, technology engineering and mathematics in learning institutions.

3. Identify priority focus areas in tertiary education, TVET and S&T post-2015 and formulate key recommendation(s) for inclusion in the Kigali Statement.
Main Achievements from 2000 to 2015

The session will build on the most recent development in science, technology, TVET and higher education.

At the continental level, the Science, Technology and Innovation Strategy for Africa 2024 (STISA-2024) of the African Union places science, technology and innovation at the epicenter of Africa’s social and economic development and addresses building capacity for delivery. A key priority area of AU agenda 2063 is to build Africa’s human capacity through the prioritisation of higher education, skills development and investment in Science, Research and Innovation. The Strategic Plan 2014 – 2017 of the AU Commission also recognizes the importance of science, technology and innovation for human capital development. These were reaffirmed by African Ministers of Science and Technology at the joint AfDB, UNESCO, AU 2nd Ministerial Forum on Science Technology and Innovation for Sustainable Development, Rabat Morocco, October, 2014.

In line with the recommendations of the third International Congress on TVET (entitled the “Shanghai Consensus”), UNESCO has recently reviewed with governments and partners key TVET policy trends and policy options currently in use. Ten key policy areas of TVET reforms have been identified and can be addressed as sub-themes for the priority as follow: good governance; demand driven TVET; social goals for TVET; inclusive TVET; empowering learners; modernising TVET provision; work based Learning; TVET teachers and trainers; ICT in TVET; and financing TVET.

The ILO African regional employers’ meeting on “Skills Policy and Systems” organized in 2013, while stating the role of employers is a prerequisite for an effective and efficient skills system, made detailed recommendations (see annex). The Triennial meeting of the Association for the Development of Education in Africa (ADEA) held in Ouagadougou, Burkina Faso in February 2012 produced key recommendations¹ related to the present thematic. The international meeting of the Organization Internationale de la Francophonie (OIF), held in Ouagadougou (Burkina Faso) on 4-7 September 2012 also provides a framework of action for French-speaking countries of Sub-Saharan Africa. FAWE as the premier organization in the promotion of female education in sub Saharan Africa has been involved in improvement of girls’ participation and performance in SMT in primary and secondary schools since 1996. The programme, which started with establishment of a comprehensive information base on the status of girls’ access to the study of SMT subjects and the constraints and difficulties they faced in learning these subjects, has over the years developed and piloted in 11 countries a series of interventions which have now been packaged as a “FAWE SMT model”.

High level forums on science and technology organized by the World Bank in Kigali and Dakar in 2014 underscored the urgency of raising the bar in building skills in applied science, engineering and technology in Africa and agreed on concrete goals and targets to be pursued.

The related issues to be addressed may include, among others, the following:

¹ Mainly as synthesis: i) As Africa’s economies are largely informal, it is important to raise the level of technological and vocational skills and qualifications and expertise ii) Technical and Vocational Skills Development (TVSD) must do more than just train and qualify. It must also ensure integration of youth into the workforce iii) TVSD programmes must be designed, implemented and supervised based on partnerships with all the stakeholders in the fields of training, as this is more likely to be effective and relevant and match the demand for skills iv) Countries are urged to establish national certification frameworks for recognizing and validating the various models of skills acquisition as a way of integrating formal, non-formal and informal TVSD programmes into coherent and unified systems while at the same time promote lifelong learning and training v) It is necessary to reposition the role of science and technology throughout education and training systems, from basic education to tertiary vi) An analysis of the current situation of research output and researcher capacities clearly shows Africa’s low contribution to global knowledge production and innovation and all efforts must be made to step up.
• What should be the priorities in tertiary education, TVET and Science, Technology and Innovation going forward?
• Regional harmonization of policies and practices. Strategies to overcome constraints identified in previous efforts
• Infrastructure and equipment for TVET and STEM
• Capacity building for skills improvement and enhanced employability with a special focus on enhancing girls’ interest, participation and performance in STEM subjects and to pursue careers in these fields including strategies to attract more women to S&T disciplines in TVET and tertiary education (e.g. infrastructure, curricula content and pedagogical skills).
• Provision of upstream policy advice and capacity development at the country level
• Development and revision of comprehensive national policies, strategies and action plans for TVET and higher education to ensure that the systems are aligned to development priorities.
• Strategies to encourage private sector participation and to make training programs more relevant to the private sector.
• Concrete actions at the regional and country levels to enhance the stock and quality of human capital in TVET, tertiary education and S&T for Africa’s transformation. Where possible, define goals and targets.
• Implementation strategies/issues:
  o Coordination mechanisms and encouraging coherent and cooperative multilateral approaches. Role of development partners
  o Public-Private Partnership (Practical cooperation between industry and education and productive sectors of the economy). Leveraging Foreign Direct Investment and other mechanisms to achieve the goal.
  o South-South collaboration and partnerships between countries and partners
  o Strengthening of monitoring and evaluation system including indicators (TVET and Higher education Management Information System - MIS)
  o Dissemination of innovative practices.

Methodology for the conference

The preparation and the venue of the session (including facilitators and resource persons) will involve key relevant actors such as:

- High level representatives and decision makers
- Practitioners
- Representatives of Social Partners: employers and employees organizations including teachers unions
- Representatives of Regional Economic Communities (RECs)
- Civil society representatives: Youth organizations, parents’ organizations, etc.
- International Agencies and Development Partners: WB and ILO (as leads) and key organizations involved in the thematic area: BIT, AFD, ERNWACA, AAU/AFRIQUAN, FAWE, AfDB, AU, OIF, JICA, ADEA, UNESCO (Harare).

Projection into the post-2015 education agenda:
The session will take into consideration the final agreement (entitled “Muscat Agreement”) of the Global Education for All Meeting (GEM), held in Muscat, Oman, 12-14 May 2014. The participants will need to consider the great relevance of this priority area as it relates to the context, challenges and perspectives for Sub Saharan Africa.

Indeed at the global/international level, the Muscat Agreement provides elements on the status of the EFA agenda, vision, principles and scope of the post-2015 education agenda and proposes an overarching Goal for the post-2015 education agenda: “Ensure equitable and inclusive quality education and lifelong learning for all by 2030”. This overarching Goal is also translated into seven (7) targets, for which minimum global benchmarks and relevant indicators will be identified/developed.

The present priority area is concerned by the “target 4: By 2030, at least x% of youth and y% of adults have the knowledge and skills for decent work and life through technical and vocational, upper secondary and tertiary education and training, with particular attention to gender equality and the most marginalized.”

Moreover, the on-going debate and exchanges between partners on the Kigali Statement provides the session and conference with a proposal of recommendation to be examined during the Kigali conference: “Recognizing the importance of science, technology and skills development as key to social and economic development, creativity and inclusive growth, we affirm our commitment at solving the problems of the unemployment and underemployment, and to provide young people with an opportunity to succeed in their professional lives. We therefore endorse the call for (a) strengthening teaching of mathematics and science at primary and secondary level; (b) a reform of secondary education with a view to doubling the proportion of students enrolled in the sciences; (c) a holistic transformation of TVET systems with a focus on transition from school to work, recognition of skills acquired beyond the formal system, development of pathways between sub-sectors, enhanced articulation between skills development and the world of work in both the formal and informal sectors of economy; (d) transforming tertiary education to increase the stock and quality of S&T graduates, and to work closely with employers to strengthen relevance of programs to country development strategies; and (e) to develop mechanisms for quality assurance and benchmarking progress (at national and regional levels) in relation to these goals.”

The Conference and specific session on the priority will discuss these key elements and propose a final draft for the Kigali Statement that will serve as a major input for the World Education Forum 2015, which will be hosted by the Republic of Korea in May 2015.

Related Priority Areas

Meeting occupational skills shortages and gaps to support transition to inclusive and green economic employment opportunities and transferring green skills and competences to create societies that adhere to the principles of sustainable development. The thematic session will therefore be in line with the conclusion of the priority area number five (5) on “Education for Sustainable Development (ESD) and Global Citizenship” to take into consideration collective interests, including science, technology and innovation, youth development and women’s empowerment as well as sustainable natural resource management. It further addresses environmental issues, such as climate change, desertification, land degradation, drought, biodiversity, as well as political issues, such as peace and security.
The thematic session will also be aligned with the priority area number six (6) on “Youth and Adult Literacy, skills and competencies for Life and Work in a Lifelong Learning Perspective”. Indeed the thematic area addresses the issue of TVET and skills development in an integrated way, youth skills and competences, up-skilling and re-skilling of low-skilled youth and adults, facilitating transition from school to work, ensuring quality learning for all, and recognizing and validating non-formal and informal learning to develop flexible pathways for learners in a lifelong learning perspective.

Key challenges and considerations: Specific issues to tackle

The reality is that the proportion of students in science, technology, engineering and mathematics (STEM) disciplines is very low. At the tertiary level for example, students in STEM disciplines represent only an estimated 20-25% of those enrolled. There is a great need to rebalance the numbers of students studying STEM disciplines.

Low significance is often given to STEM education in national education policies. There is a need to advocate for a move toward national education policies which are consciously design with STEM education policies as subsets of the national education policies which clarifies national goals and objectives for STEM education from primary to tertiary education levels.

A strong base in science and mathematics is necessary at the primary and secondary education levels. There is a need to define system standards for science education at primary and secondary levels which will clarify expectations of teachers, students and the nation at large.

Furthermore women are heavily under-represented in most science and technology coursework, related disciplines and professions. Specific interventions aimed at improving girls’ enrollment and performance in STEM fields is a critical element of efforts to improve the overall quality of education in sub Saharan Africa (SSA). Not using the workforce or resources provided by the female population, which represents over half the world population, limits human and social progress.

Access remains a central problem. Provisions to reach marginalised populations such as ethnic minorities, people with disabilities, and demobilised soldiers need to be expanded and strengthened in a way to set-up alternative programmes and recognition of prior experience. In most countries, women are dominant in the informal economy (about 60% of the labour force) and in the service sector, while industrial and technology courses are still considered as areas reserved for male students. Furthermore review of secondary (and primary) education curricula must be a permanent exercise to continually adjust to national demands for students at the HEIs STEM programmes.

One third of children of primary school age, and three quarters of children of secondary school age, are outside the formal education system. These youth need access to alternative education and training in order to be able to engage in productive work. So called “second chance” opportunities including reskilling and short term skills development interventions are needed.

The TVET and higher education sub-sectors are highly fragmented. At the regional and sub-regional levels, despite some increasing efforts of partners and institutions\(^2\), there still remains a lack of coordination and synergy between actors that could act more together to solve the problem of the increasing unemployment and under-employment of the youth in sub-Saharan Africa. For most sub-Saharan African countries, the enrolment rate in formal TVET at secondary level is 5 percent or less.

\(^2\) E.g the “Abuja process” and the development since 2010 of the Inter Agency Task Team (IATT) in the ECOWAS sub-region in line with the Regional Economic Community (ECOWAS Secretariat)
Non-formal TVET is predominant (80 to 90% on average), and in most education systems, learning opportunities at the workplace, non-formal learning, private provision, and TVET under various non-education sector ministries tend to operate separate TVET sub-systems. The involvement of numerous governmental and nongovernmental actors in TVET results in policies that are not coherent. Higher education and research institutions also suffer from a lack of coordination which impedes potential resources sharing and collaboration. Higher education institutions in general are not adequately linked with each other and robust higher education and research networks are lacking.

Weak governance at both national and institutional levels continues to stymie progress and quality improvement in TVET and higher education. Furthermore inadequate funding, limited resources, out of date facilities and shortages of well-trained faculty, combined with growing numbers of youth seeking post-secondary education further exacerbates the problem. Only a few governments in Africa are able to finance TVET at a level that can support quality training. A number of African countries have created national funds for training which can work more effectively if necessary reforms are introduced such as better governance, involvement of stakeholders and ensuring sustainable resources. TVET and manual work frequently also suffer from poor social status and perception.

TVET and higher education are all too often divorced from the realities of industry, innovation and the labour market. Demand driven training needs to be made a priority. Skills needs are frequently and mainly determined on the basis of data on the formal labour market that represents only a small segment of the real employment sector (10% on average). However, statistics show that informal employment opportunities are increasing in number throughout Africa. Because of accelerating urbanisation, a constant/diminishing rural population is expected to produce food supplies for a rapidly increasing urban population. Training for rural populations in agriculture is crucial. The type of low-level skills often acquired through traditional apprenticeship (such as hairdressing, dressmaking, carpentry, etc.) are not capable of producing a globally competitive workforce imbued with the higher level skills necessary for technology adaptation and innovation, transformation of national production systems, and industrialization of the economy.

Better and more data is needed to help inform policy choices. Existing data sources need to be strengthened and a reliable high quality data system further developed. Solid statistics, indicators and data management systems are currently weak. New sources of information and methods for sharing of information are necessary. Furthermore, training programmes have also to take into account predictive forecasting, where future needs are anticipated in a rapidly changing world.
Reference

African Union Commission Strategic Plan 2014 - 2017
African Union Agenda 2063

Key website of International Organisations work in TVET:
Agence Française de Développement (AFD)
African Union Science, Technology and Innovation Strategy for Africa 2024

Key websites of International Organisations work in post-secondary education:
Agence Française de Développement (AFD)
Association for the Development of Education in Africa (ADEA): www.adeanet.org
CEDEFOP: www.cedefop.eu
European Training Foundation (ETF): www.etf.europa.eu
ILO: www.ilo.org

OECD skills strategy:
http://www.oecd.org/document/6/0,3746,en_2649_37455_47414086_1_1_1_37455,00.html

OIF: http://www.francophonie.org/


- UNESCO International Centre for TVET (UNESCO-UNEVOC): http://www.unevoc.unesco.org
- UNESCO Head Quarters (HQ) at global level:
- UNESCO Dakar as Regional thematic coordinator for Sub-Saharan Africa:

World Bank Education: www.worldbank.org
(others)
Annex 1: Key recommendations of the African regional employers workshop

- Skills are a driver for building competitiveness, improving productivity and employment growth for enterprises and countries.

- The development of skills policies and strategies should be based on the principle of social dialogue and involve employers, government and workers. Employers must be pro-actively involved in the development of skills policy and strategy, which would ensure that their position reflects in the eventual policy or strategy.

- Skills policy and strategies should be aligned with other socio-economic policies.

- Each country should have an appropriate and simple institutional framework for skills development. Each of the institutions should be accountable for their performance to the stakeholders. Employers should provide strong leadership in these bodies.

- Employers should take the lead in identifying skills needs and gaps, both for current needs and future needs.

- Employment services are a good source of information for conveying labour market information to employers, education and training providers, as well as to communities and young persons. Employers should work closely with employment services providers.

- Ensuring the broad availability of quality education, matching skills supply to current demand of skills, improving access of women, and other disadvantaged groups to quality training, and helping workers and enterprises adjust to change leads to a dynamic development process.

- Basic education should provide core literacy, numeracy and employability skills.

- Vocational training including apprenticeships need to be de-stigmatised. They need to be given prestige and be seen as a preferred career option. Employers should lead the campaign.

- Skills development levies should be rationalised. Employers must be involved in their design, management and monitoring and evaluation, to ensure that they are used efficiently for skills development.

- Government should create a conducive policy environment for promoting public private partnership.

- Organisation should have policies for gender equity and address specific challenges facing women at the workplace.