

# Draft Concept Note and Programme

This draft October 23, 2017

## Senior Experts Dialogue on Science, Technology and the African Transformation Agenda (SED)-2017

**Theme:** Higher Education, STI and the African integration and development agenda

### I. Background

1. The United Nations Economic Commission (ECA) and the Ministry of Scientific Research, Republic of Senegal, in collaboration with the African Union Commission (AUC) are organizing a three-day Senior Experts Dialogue (SED) on Science, Technology and Innovation (STI) and the African Transformation Agenda on the theme *“Higher Education, Science, Technology and Innovation and the African integration and development agenda.”* The Dialogue will be held in Dakar, Senegal, on 28-30 November 2017 and envisions the participation of about 50 experts drawn from governments, the private sector, financial institutions, non-governmental organisations, and research institutions from within and outside Senegal.

2. For much of this century, Africa accounted for a significant number of the fastest growing countries in the world. Much of this growth, evidence shows, has been due to factor (labour and capital) accumulation, not total factor productivity growth (TFPG). In recent times, growth has stalled or decelerated in a number of countries, especially commodities exporters. The continent's three largest economies -Nigeria, South Africa, Egypt – contracted and are just coming out of recession.

3. This turn of events is explained by a number of factors including decline in commodities export, slowdown in China's imports, and a crushing foreign exchange scarcity. However, it makes conspicuous what is generally known from the experience of other regions that economic development is an outcome not just of factor accumulation but also of investments in the generation of knowledge and new ideas, and the innovations arising from them which result in the creation of new or significantly improved goods and services or completely new sectors of economic activity. Africa lags in this area due to the poor state of its higher education, and research and science, technology and innovation sectors. Urgent policy action by African governments and their development partners is required to address this fetter on Africa's development.

4. This concept note presents the approach of ECA and her partners to address the twin challenges of Africa's sub-optimally performing higher education, and science, technology and innovation sectors. This note draws on past and on-going work at ECA and elsewhere and is

designed to stimulate discussion and generate new ideas at the Dialogue on how best to organize African higher education to create and transfer knowledge and ideas to instigate innovation and promote economic growth and transformation in Africa.

## II. The Senior Experts Dialogue on Science, Technology and the African Transformation Agenda

5. SED is an initiative of ECA designed to support member States in their efforts to leverage science, technology and innovation (STI) to drive the structural transformation of their economies. The impetus for the SED comes from two principal sources: a) the general recognition that most of Africa’s development challenges are amenable to resolution through the careful and purposeful application of STI, and b) the recognition by the international community that STI is an important means of implementation of the outcomes of recent UN summits including the Addis Ababa Action Agenda of the Third International Conference on Financing for Development; Rio+20; the United Nations 2030 Agenda for Sustainable Development (SDGs), the Istanbul Programme of Action for Least Developed Countries, and the African Union’s long-term plan for the structural transformation of the continent – Agenda 2063 (AU 2014), along with the continental Science Technology and Innovation Strategy for Africa 2024 (STISA 2024).

6. SED provides an arena for rigorous interrogation of STI policies and frameworks, discussion of emerging issues in STI, experience sharing and peer learning. In this role, it provides a platform for surfacing, identifying, and addressing leading issues likely to enhance the ability of African countries to harness STI to achieve their structural transformation and sustainable development objectives.

SEDs thus far

<b>Year</b>	<b>Hosting country</b>	<b>Theme</b>
SED-2014	Federal Ministry of Science and Technology of the Federal Republic of Nigeria	<i>Making Science, Technology and Innovation work for the African Transformation Agenda</i>
SED-2015	National Commission for Science, Technology and Innovation (NACOSTI) of the Government of Kenya	<i>Innovation hubs, clusters and parks and the African Structural Transformation Agenda</i>
SED-2016	Department of Science and Technology (DST) of the Republic of South Africa	<i>Cities as hubs of Innovation for Africa’s Transformation</i>
SED-2017	Ministry of Scientific Research, Republic of Senegal	<i>Higher Education, STI and the African integration and development agenda.</i>

7. SED-2014 underscored the central role that higher education can play as an instrument for transformation and urged African governments to commit additional resources to higher education, research and development.

### **III. The 2017 SED**

8. The transition of economies into knowledge economies has amplified interest in Africa in higher education<sup>1</sup> as an engine of economic growth, as the producer of the scientific and technological advancements needed to sustain innovation and power economic growth. SED-2017 on *Higher Education, STI and the African integration and development agenda*, responds to this interest. It will explore the nexus of higher education and STI and the implications of this relationship for the African integration and development agenda. It will do so through two specific and related processes: examination of the impact of ICT on higher education and scientific research, and on technological innovation; and examination of the possible impact of the Continental Free Trade Area (CFTA) now under negotiation<sup>2</sup> on the structure of the higher education market in member States and on competition through innovation. Each of these processes has implications for the supply and demand of HE and STI and hence for the growth and development and integration of Africa.

9. UN Agenda 2030 on Sustainable Development and the African Union Agenda 2063, long-term perspective plan for the development of the continent, both recognize that success will depend on a strengthened higher education and research sector and on the ability of countries to harness science, technology and innovation to accelerate the transformation of the continent. All four activities - higher education, science, technology, and innovation- in Africa have changed with time and will continue to change.

- *African higher education sector*

10. The African higher education and research sectors presented enormous promise in the immediate post independence years. They had political support, were reasonably well funded and many were globally competitive. But the situation quickly changed in the 1970s and 1980s. Beset by political problems and social instability, shrinking national budgets and high debt burden, and new claims on scarce resources arising from epidemics such as HIV/AIDS, African governments cut back investments in higher education and research. There were also problems of governance internal to higher education and research institutions. Finally, international finance organizations such as the World Bank focused their lending to the education sector on primary education. Arguing that the social returns to higher education were lower than the social returns to primary

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<sup>1</sup> Higher education includes all tertiary institutions. We do not limit the definition and use of the concept to universities even though the bulk of research is carried out in them.

<sup>2</sup> Put differently, the theme will be explored through regional integration in (e)-infrastructure and trade.

education, they urged African governments to introduce fees and other cost recovery policies in higher education. These policies, in the countries in which they were introduced, upset the social order and worsened the situation by not only politicizing higher education but also by instigating brain drain from the sector.

11. African higher education has changed in demonstrable ways since 2000. The number of publicly owned higher education institutions has grown and with it an exponential expansion in enrollments and course offerings. The state no longer has monopoly in the provision of higher education. Private-for-profit, not-for-profit and non-governmental provision of higher education, including cross-border provision, have become commonplace. Further, widespread diffusion of ICT is breaching the constraint of capacity and geography, making it possible for thousands of students who otherwise would not have had access to post-secondary education to now access it through online courses, including through massive open online courses (MOOCs). Opposition to cost recovery schemes in public universities has fallen and there is greater acceptance of the idea that African higher education needs to be reformed to make them relevant to national economic and social imperatives.

12. Many problems persist: inadequate funding, inadequate or absent research infrastructure, poor staffing, poorly prepared students; the tension between research and teaching arising from rapid increases in enrolment because of high secondary school graduation rates); absence of differentiation among universities; and weak/poor internal governance. Specialized research institutions continue to be administered in most cases as extensions of the civil service. The consequence of this state of affairs is all too visible: a higher education and research sector that is making a very suboptimal contribution to the efforts to find solutions to many of the development challenges that front the continent. Success in repositioning African higher education to serve as a source of new knowledge and driver of innovations will depend on the ability and willingness of governments to address and attenuate many of the problems still fettering the sector.

- *Africa's STI performance*

13. The above finds reflection in Africa's poor STI performance. Although there is evidence of significant firm level innovation occurring in African countries, Africa as a region performs poorly relative to other regions of the world on most measures of scientific research productivity and technological innovation. African countries are largely found in the bottom third of most global rankings of countries on innovation such as the Global Innovation Index (GII). Engineering capacity is weak as detailed in the recent report “Engineering and Economic growth: a global view” by the (UK) Royal Academy of Engineering.

14. The continent accounts for 2.4% of the world’s peer reviewed scientific and technical publications, 0.5% of all patents filed in 2016 and 0.2% of the global exports of high-tech products. Africa’s share of researchers (2.4% of the world’s total) marches that of its publications (2.4% of the world’s publications) while its rather small share of global technology products may suggest

the absence of firms capable of absorbing new and emerging knowledge, and generating new and innovative technology products (goods and services) of interest to the world. This is supported by the observation that Africa is the only major region where the contributions of agricultural value-added to GDP remains above 15%.

#### **IV. The policy challenge**

15. The research question of the SED is: how best can African countries organize higher education in order to create and transfer knowledge and promote innovation and economic growth with transformation to advance the African integration and development agenda. Fully cognizant of the idea that innovation is a non-linear process, this question derives from the historical conceptualization of innovation that places higher education at the earliest stage of knowledge creation and focuses on university research as the generator of ideas<sup>3</sup>. The policy prescription of this model is that African higher education institutions should be tasked with producing the skilled and talented work force for this new economy which will be characterized by the demands of knowledge and information. Researchers at these institutions will create the new knowledge, products, services and processes that will assure the competitiveness of African countries not only in competition with each other but with the rest of the world.

16. Flowing from the above, the policy challenge for all African countries is four fold: a) policies to revitalize higher education to position it to be a source of knowledge and ideas to foster scientific research and innovation, b) policies to harmonize higher education and STI policies to ensure that they support each other, c) policies to create market conditions, the macroeconomic and trade policies as well as regulations conducive to transform inventions (knowledge) into the innovations required to achieve African integration and development; and d) policies to manage out the future downside risks associated with new technologies including the possible impact on employment and job creation

17. As stated earlier, for the purposes of this Dialogue, we focus on two processes which in our view will play an outsize role in determining the future trajectory of Africa's development: *movement to a continental free trade area (CFTA)* pursuant to the goals of the Abuja Treaty on the African Economic Community (AEC) and *increasing interconnectedness through ICT*. Each of these has implications for both the supply and demand for higher education and STI and hence for the continent's growth and development, and integration.

18. CFTA will spur growth through increased trade. Trade will cause harmonization of rules and standards. As countries compete among themselves, in the absence of tariffs, they will seek competitive advantage through higher quality human capital, innovations and creating new sectors

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<sup>3</sup> We subscribe to the definition of innovation as a non-linear process but adopt the historical conceptualization for ease of analysis.

through STI. A much larger continental market may encourage technology transfers and greater exploitation of economies of scale and a more efficient resource allocation driven by stronger competitive pressures. Differences in per capita GDP may spur countries with lower per capita GDP to try to catch up through catching-up mechanisms, leading to higher capital accumulation as well as transfer of technology. Technology transfer takes place through different channels including trade, capital flows, patent transfers as returns to the application of technologies that are new for the entrant but old for the incumbents are higher in the poorer countries of the CFTA.

19. Information and communications technologies (ICT), digital infrastructures, will be critical for the success. Increasingly, ICTs are becoming the backbone of teaching in African universities and are fostering scientific research, technological progress and innovation. In some cases, ICTs are making higher education independent of location, thus attenuating the constraints of capacity (in terms of admission places) and distance (thus democratizing access), thus reducing unit cost of a course and enabling higher education institutions to exploit economies of scale and scope. Many African regional integration arrangements (regional economic communities) are adopting policies to promote a common, single ICT market. Telecommunications operators are making needed investments to enable them serve regional markets. Competition and advances in technology are reducing the cost of ICT services. The consequence of this growing infrastructure integration will be a much larger market for higher education and for goods and services.

## **V. Expected outcome**

20. The expected outcome of the Dialogue will be a set of recommendations that will assist member States to design higher education, and science, technology and innovation policies to support the transformation of their economies pursuant to the African integration and development agenda. These may include recommendations on:

- reforming and revitalizing the higher education sector in African countries;
- ways that higher education and STI could be leverages to achieve of each of the SDGs in Africa;
- possible themes for future SEDs; and
- formulation of an ECA research programme on higher education, STI and the SDGs.

The outcome of the Dialogue will be summarized in an analytical, policy report, which will serve as guiding reference for policy makers and an input into ECA's programme development. It is hoped that the report will provoke inquiry, instigate policy discussion and stimulate new ideas and policies on these pressing issues of the continent.

## **VI. Participation**

21. Participation is by invitation only. Invitations will be extended to African Ministries responsible for Science, Technology and Innovation, Ministries responsible for higher education to nominate senior policy experts to attend. Invitations will also be extended to heads of STI

institutions, AU departments, NEPAD, regional economic communities, selected academics institutions, UN agencies with pertinent mandate, multi-lateral and bilateral development agencies; and NGOs/CSOs. ECA will sponsor about 35 senior policy experts from African countries. The host country determines the composition of her delegation.

## VII. Format

22. The Dialogue will follow the format of the World Economic Forum (WEF). Panelists will interrogate the issues in an open discussion led by a moderator. There will be no formal presentations. Panelists will be requested to submit their talking points and notes to the Secretariat for purposes of preparing the report.

## VII. Date and venue

23. The Dialogue will be held at Dakar, Republic of Senegal, from 15-17 November 2017.

## IX Contacts

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