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Thirtieth meeting of the Committee of Experts

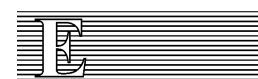


AFRICAN UNION
COMMISSION

Sixth meeting of the Committee of Experts

**Meeting of the Committee of Experts of the 4th Joint Annual
Meetings of the AU Conference of Ministers of Economy and
Finance and ECA Conference of African Ministers of Finance,
Planning and Economic Development**

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Promoting Science, Technology and Innovation for Development in Africa

Information Note

1. INTRODUCTION

1. A number of developing countries have used science, technology and innovation (STI) to meet their healthcare needs, develop industries and overcome economic challenges. For example, Cuba has made biotechnology part of its healthcare system, Brazil has developed one of the most successful aircraft manufacturing industries and South Africa seeks to become one of the top producers of pharmaceuticals in the world. Some of the common measures in these examples include political leadership in promoting the initiatives, domestic investment in the programmes and resource availability to facilitate innovation and entrepreneurship. African countries can learn from the experience of others to meet its food, health, energy, housing and transport needs by developing a sound technological and industrial base.

2. In recognizing the significant role of STI for economic development, the Science with Africa (SWA) biannual conference is organized by the United Nations Economic Commission for Africa (UNECA) in collaboration with the African Union Commission (AUC), and other United Nations agencies and partners¹ which aim to strengthen the links between STI and economic development in Africa. For instance, the SWA conference on the theme *Science, Innovation and Entrepreneurship*, held 23-25 June 2010, explored policies, measures and mechanisms to meet Africa's development goals and aspirations by harnessing the potential of entrepreneurship and innovation to transform ideas and technologies into economic and social value.

3. Innovation is now recognized as the main driver of economic growth in developed countries and is regarded as a key pillar for competitiveness in trade. As such, countries seeking to unleash the power of entrepreneurship and innovation have to put the right policies, support measures and mechanisms in place, such as appropriate intellectual property rights (IPR) regulations, resources and partnerships.

The gaps in moving from science to business in Africa

4. In order to apply new ideas and knowledge to tackle development challenges, knowledge needs to be created first. In a traditional linear model, research is undertaken to generate outputs that may provide leads for further investigation or go to field trials and pilot stages. Promising marketable leads are then further refined to meet market needs. In practice, there are loops between the various stages, leaps of stages, backward and forward movement of ideas, and potential failures at any stage. In general, ideas are generated by researchers, entrepreneurs, institutions, industry, market and the general public, among others. In order to test the ideas, research is traditionally performed by researchers with the support of their institutions, firms and other players (e.g. funders of research).

5. In some technology fields, experimental development is the most expensive stage of research and development (R&D) activities as work moves from laboratory desks to the field (e.g. clinical and field trials of drugs and crops, respectively). There are two challenges Africa faces at this stage: (a) most donors and governments do not traditionally fund work at this stage; and (b) the skills needed to navigate complex regulatory requirements and generate the data that are crucial to registering and protecting the products are in many cases missing, rare or still emerging.

¹ These include the Government of Finland, UNESCO, IDRC, Ethiopian Airlines, ISESCO, ICSU ROA, CRDF, IGI, ABR, ARCT, ANSTS, RTI International, ARIPO, OAPI and CTIC. Media partners notably, BEN TV, AFRICABLE, SABC and other media institutions.

6. Therefore, the region is facing two important gaps – financing and knowledge-resource gaps – at the experimental development stage. The social and/or economic value is realized at the stage when the products or processes go to the market. It is at this stage that more jobs and wealth are likely to be generated. The major hurdles at this stage include lack of seed and early stage capital to bring the product to market and the skills needed to nurture the start-ups to become commercially viable firms.

II. STEPS TO UNLEASH INNOVATION IN AFRICA

Human capital development

7. Africa needs to develop science and engineering talent, technology entrepreneurs and science and technology (S&T) managers to ensure that the limited human, financial and institutional resources are efficiently mobilized and allocated and potentially useful research outputs are well protected and exploited to obtain their full potential benefits.

STI infrastructure

8. Hard and soft STI infrastructure is critical to meeting this agenda. Soft infrastructure, such as networks and information technology, could provide access to management, intellectual and (R&D) resources. Hard infrastructure, such as well-equipped centres, science and technology parks, technology and business incubators, among other common facilities, could reduce the costs for innovators and entrepreneurs.

Innovation financing

9. There are several ways of increasing financing for innovation. The most direct one will be to offer special grants, loans and guarantees for start-ups and new firms as well as subsidies and tax incentives for (R&D).

Academia-industry-government cooperation

10. In Africa, the private sector is still relatively small and is largely unsophisticated technologically, for example, small and medium enterprises (SMEs). Therefore, promoting cooperation through joint projects and programmes of mutual interest to (R&D) centres, SMEs and large firms could promote innovation and entrepreneurship. Governments could also require ministries to reserve a fraction of their budget for promoting STI joint initiatives between their (R&D) centres and SMEs, as is the case in the United States.

Legal and regulatory framework

11. The legal and regulatory framework could be used effectively to encourage fair competition, promote innovative firms, attract foreign innovative investors and remove administrative entry barriers. In addition, countries may also need to develop clear technology commercialization rules.

Promotion of technology innovators and entrepreneurs

12. African scientists continue to play a key role in developing the seeds that feed the continent and offer complex but lifesaving medical procedures under difficult conditions. As such, STI promotion of technology entrepreneurs, appreciation and recognition of technological achievements and the many career and business opportunities that S&T offers could help attract students, especially girls, to pursue the sciences and science careers, and to help produce the next generation of innovative entrepreneurs like Bill Gates and Mo Ibrahim.

International collaboration

13. International collaborations enable and facilitate knowledge acquisition and learning especially in multidisciplinary fields such as information technology and biotechnology. African S&T diplomacy has to be stepped up as very few African countries have formal (R&D) or S&T technology agreements with leading and emerging technology producers (e.g. the United States, Germany, Korea and Sweden).

III. THE SCIENCE WITH AFRICA-II THEMES

14. The following cross-cutting themes were addressed:

- (a) National experiences in STI policy formulation;
- (b) Enabling environment for innovation;
- (c) Financing innovation;
- (d) Innovative strategies for promoting technology commercialization; and
- (e) ICT, innovation and entrepreneurship.

The ECA role in STI promotion in Africa

15. ECA has developed a number of programmes to help member States to promote the use of STI to achieve sustainable socio-economic development. The STI programme offers:

- (a) Policy research and analysis activities upon request by member States to meet their development needs and aspirations;
- (b) Outreach and advocacy activities through the bi-annual SWA Conference, which was last held in 2010, and through another bi-annual mechanism, the Committee on Development Information, Science and Technology (CODIST) Conference which will be held 2-5 May 2011 on the theme '*Innovation for Africa's industrial development*';
- (c) STI support to AU and its New Partnership for Africa's Development (NEPAD) through the activities outlined in the Consolidated Plan of Action; and
- (d) The Afro guide for the establishment of commonly accepted African and international standards for the promotion of ethics and good clinical ethics and through the Access to Scientific Knowledge in Africa (ASKIA), which is an initiative to support and promote access to scientific knowledge by African scientists, decision makers, students and researchers.

16. There are also several activities that fall within the African Innovation Centre which are actions by ECA to meet the recommendations of the first SWA Conference in support of the development of businesses in Africa. These include the launching of the following sub-programmes and activities:

- (a) Africa Science to Business Challenge which offers opportunities to African entrepreneurs to learn how to transform their ideas into businesses;
- (b) The African Science and Technology Endowment Fund (ASTIEF) which seeks to invest in bankable (R&D) outputs that are likely to make a commercial and social return to investment;
- (c) The African Technology Development and Transfer Network which supports training programmes, sharing of experiences and expertise and mentoring/coaching of emerging inventors and start-ups;
- (d) A consultative forum on the Science of Climate Change and Economic Prosperity in Africa, which led to the publication and launch of a book on *Science of Climate Change in Africa*; and
- (e) Development of the African Innovation Framework (AIF) to guide STI development on the continent. This takes opportunities and challenges for the development of African innovation strategies into consideration, to complement national, subregional and sectoral ICT and S&T policies and strategies.

The AUC role in STI promotion in Africa

17. Apart from partnering with AUC in organizing the SWA initiative, ECA supports AUC, through its mandate in promoting the use of S&T for sustainable development in member States and Regional Economic Communities (RECs), to improve access and quality of education, and enhance the utilization of ICT applications for socio-economic development. This is done in collaboration with the AUC Department of Human Resources, Science and Technology, which is charged with the responsibility to drive continental programmes in S&T, ICT, education, human resources, and the youth.

18. With regard to S&T, the Department works through a statutory technical committee, the African Ministers' Conference on Science and Technology (AMCOST) that provides a platform to allow Ministers to deliberate periodically on policies and programmes relating to S&T development in Africa. It has also instituted a biennial congress of African scientists and policymakers, whose proposals feed into the formulation and review of harmonized continental policy necessary to optimize the utilization of Africa's human and institutional resources to ensure that S&T contributes to attainment of the AU vision.

19. Through these processes, the Department, in collaboration with the NEPAD Office for S&T, has developed Africa's Consolidated Plan of Action for Science and Technology, which articulates the continental priorities in S&T. It is regarded as the basis for defining Africa's vision for S&T.

20. In discussing the role of the State in African development, in order to identify an appropriate set of interventions to enhance the role of the State and other stakeholders in performing the key tasks essential for economic transformation in Africa, ICT, and S&T should be at the centre of all development agendas if the continent is to achieve meaningful development and be competitive in the

global arena. With reference to the role of the State in economic transformation, especially in relation to the role of the Ministers of Finance in enhancing the utilization of ICT and S&T for development, the selected recommendations from SWA-II (box 1) are envisaged as critically significant to the African continent.

BOX 1: Excerpts from SWA-II Recommendations

1. ECA and AUC should help African member States in the development of methods to monitor the progress and development impacts of knowledge, IPR and technology transfer.
- 4.3. The participants urge African governments to provide sustainable water strategies and frameworks for clean and safe water, sanitation services and for food. The African academic and research communities have to develop and support centres of excellence for the monitoring and treatment of water.
2. African governments and their institutions should promote, facilitate, strengthen and safeguard the business, market and entrepreneurship capacity and skills within their national STI systems in order to translate R&D outputs into wealth-creation commodities.
3. ECA and AUC should urge African governments to promote and facilitate public-private sector linkages in integrated technology development, transfer and marketing of the primary commodities and their processing and the support services for crops, livestock and poultry.
4. ECA and AUC should urge African governments to start promoting greener economies through investments in the development and the utilization of renewable energies, especially the ubiquitous and the enormous solar and wind energy resources available on the continent.
5. ECA and AUC should continue promoting and facilitating investments in ICTs in Africa for promotion of quality education, research, innovation, entrepreneurship, increased economic growth and competitiveness, and for job and wealth creation on the continent.
6. African governments should reduce transaction costs in the registering and commercialization of innovations, and should support local entrepreneurs in accessing financial resources.
7. African business communities, regional and international Development Banks on the continent and in the Diaspora, friends and supporters of the continent (including individuals and the corporate sector) are urged to make financial contributions to ASTIEF (African Science, Technology and Innovation Endowment Fund) that will finance and support enterprising individuals and R&D centres in Africa, to transform their research findings and inventions into market commodities.
8. ECA and AUC should urge each African government to have a national Intellectual Property (IP) policy by 2015 and the prepared policy should take into account national STI systems and economic development plans as well as the implementation tools that ensure involvement of local communities.

Relevance of the Ministerial Conference theme to the Science with Africa Initiative

21. An analysis of economies and their history point to the fact that the success of today's advanced industrialized countries lies in their long tradition of innovation from various dimensions: institutions, technology, trade, organization, application and management of natural resources. There are similar factors to explain the economic transformation of recently industrialized countries in the developing world. Therefore, it is essential to promote scientific thinking and awareness on the important role of STI in Africa for economic transformation. This has to be determined on a national as well as on a regional basis.

22. However, it has been advocated for some time now that governments, the private sector, universities and research institutions are important parts of a larger system of knowledge based on common broad goals for innovation. In Africa, the State and private sectors have varying capacities. How the State and private sector complement their respective roles needs to be considered.

23. This requires a strategic governance strategy as an integral part of a comprehensive development framework that promotes and galvanizes the deployment and utilization of STI as drivers of economic transformation through increased investments and rapid technology transfer. A more pronounced focus on STI would enable countries to take concerted steps to unleash innovation as a means of creating one of the necessary bases for economic transformation.