

Higher Education for Science, Technology and Innovation

Accelerating Africa's Aspirations

Communique

Kigali, Rwanda

March 13, 2014

We, the Governments here represented – Ethiopia, Mozambique, Rwanda, Senegal, and Uganda – have gathered in Kigali on March 13, 2014 by invitation of the Government of Rwanda and the World Bank for a High Level Forum on Higher Education Science and Technology in Africa, and in the presence of representatives of international and regional research organizations, educational institutions, eminent scientists, the private sector, and technical and financial partners, for the purpose of strengthening science and technology capability for economic transformation and development in Africa. Inspired by the recent success of the Asian Tigers, **We**, the African governments, resolve to adopt a strategy that uses strategic investments in science and technology to accelerate Africa's development into a developed knowledge-based society within one generation.

NOTING THAT:

- African economies have been growing but productivity is low and evolution to higher value products and services has been slow;
- While most of the world is aging, 11 million youth will enter the African labor market every year over the next decade. They are huge, unique, and largely untapped resource.
- Science, Technology and Innovation (STI) policies, strategies and action plans create a holistic framework for knowledge production and sharing, linking knowledge systems and enterprise, enhancing efforts to strengthen and monitor sustainable development processes;
- STI are drivers of job creation and economic growth that is both sustained and transformational;
- Effective STI systems build Africa's capacity to address the most pressing global and African challenges by increasing productivity in areas such as agriculture, infrastructure development, energy, health services, water and sanitation; innovation to address issues of climate change and environment and greater competitiveness in the global market;
- Inadequate funding, learning resources and physical facilities and scientific infrastructure, shortage of qualified academic staff, weak governance and a massive expansion of the student body has led to a deterioration of learning quality in many universities and research institutions;
- The proportion of students in science, technology, engineering and mathematics (STEM) disciplines is very low, about 20-25% in the region, and the availability of market-relevant skills is limited;
- The emigration of Africa's talent affects the level of Research and Development (R&D);

- Women are egregiously under-represented in most science- and technology-related courses, research programs, professions and leadership;
- Higher education and research institutions are insufficiently networked with each other and lack effective linkages with business firms and the development priorities of the region;
- There are insufficient opportunities for student and staff mobility to facilitate knowledge sharing and regional integration;
- A reliable and relevant data system is necessary to inform the STI system by strengthening the existing data sources and developing new sources of information and knowledge sharing, including solid statistics, indicators and policy systems; and
- A critical mass of well-trained scientists, engineers, technologists and innovators is needed to drive the development of businesses and industries that can add value to Africa's rich array of natural resources and people.

RECALLING THE SINCERE EFFORTS MADE TO ADDRESS THE GAPS IN SCIENTIFIC AND TECHNICAL CAPABILITY including:

- The African Union Science and Technology Consolidated Plan of Action (CPA) established in 2007 that aims to assert "Africa's position in the global knowledge society, through the development and application of S&T in eradication of poverty, fighting diseases, stemming environmental degradation, improving the global economic competitiveness of the continent" (AMCOST 2007:2); and AMCOST 2012; and
- The African science, Technology and Innovation Indicators (ASTII) initiative through the Department of Human Resources, Science and Technology of the African Union Commission (AUC), NEPAD (New Partnership for Africa's Development) and Office of Science and Technology (OST) which aims to provide information and analysis on STI initiatives in Africa.

UNANIMOUSLY AFFIRM THAT:

- The time is right for greater investment fueled by the steady expansion of African economies, growing foreign direct investment (FDI) and new revenues from natural resources;
- There is an opportunity now to harness Africa's natural resources boom to increase investments in science, engineering and technology capacity;
- There is a potential to carefully identifying leap-frogging technologies;
- There is need to develop institutional frameworks, STI policies, strategies and action plans as integral part of the national development plans, in order to transform the primary resource-based economy into an innovation and knowledge-based economy;
- There is a need to increase significantly the enrollments in secondary and tertiary education in Science, Technology, Engineering and Mathematics (STEM) disciplines, particularly for girls;
- It is fundamental for Africa to increase the PhD programs in the continent and continue to engage in partnerships that increase the number of PhD holders in Africa;
- There is a need to harness the potential of ICT as the enabler to improve the quality and access of higher education;
- There is a need for specific measures to improve relevance, quality and excellence in learning, and research in particular in higher education;

- Linkages between academic research and industry are needed to ensure that research is relevant and curricula are aligned with the latest industry trends, as well as to ensure the commercialization of the R&D results;
- There is need to adopt a regional approach, to develop the capacity and quality of higher education, science, engineering and technology within Africa which is critical to leverage economies of scale;
- There is a need for coordinated action by all actors around country strategic plans and the CPA at the regional level;
- Higher education and research institutions need new institutional rules and governance mechanisms that allow them to be more dynamic and innovative; and
- There is a need to leverage and build linkages with the African diaspora.

The objective is to strengthen the contribution of higher education and STI to socio-economic transformation in Africa by ensuring that investment is accompanied by a sustained effort to build the human capital to maximize returns on these investments, operate and maintain new infrastructure; and to create earning opportunities in an inclusive manner.

CALL FOR AN AMBITIOUS COMMITMENT OF ALL STAKEHOLDERS:

- **To our own countries:** to develop integrated national strategies and implementation programs prioritizing STI for social-economic development, including strategic investments and actions aiming to increase the stock and quality of youth who are competent in STI, to strengthen the abilities of technical and vocational training institutions, higher education institutions, networks and scientific organizations; and to build public awareness of the role of STI in national development; to renew our existing commitments in the areas of Science, Technology, Research and Innovation; and to improve the quality of science and mathematics learning in school education; such as the Decision of the Assembly of the AU 8th ordinary session in 2007 which recommended allocating at least 1 percent of Gross Domestic Product (GDP) to R&D;
- **To regional bodies:** to facilitate the establishment of regional institutions, regional networks, clusters and centers of excellence for STI so as to leverage economies of scale and to promote knowledge sharing across national boundaries;
- **To higher education networks and institutions:** to increase enrollments in favor of science and technology disciplines; to raise the quality of science and technology teaching and research; and to strengthen collaboration with industry, business and communities and set up entrepreneurship programs so as to better orient their programs towards the pressing development challenges in Africa and to improve employability of graduates;
- **To the private sector:** to strengthen engagements in public-private partnerships in learning and R&D to contribute to investment in science and technology capacity including building human capital and to strengthen the stock of knowledge and research on Africa's development challenges;
- **To technical and financial partners:** to respond to requests to mobilize resources toward building science, engineering and technology capability in support of economic transformation and social development; and to jointly work together to support STI initiatives in Africa
- **To all stakeholders:** To encourage the creation of a Fund for the region to support the development of capabilities in sciences, engineering and technology from technical education to

higher education, research and innovation in the region with different areas of focus, e.g. scholarships program for quality home-grown and international postgraduate studies; policy and technical studies; assessment of human resource needs in priority sectors; benchmarking of programs and institutions; and development of innovative projects, including mobilization of requisite financing.

Finally we call upon all concerned parties to recognize the urgency of the challenges as well as the opportunities to build momentum toward enhancing science and technology capability as a key driver for Africa's transformation.

WE TOGETHER DECLARE OUR COMMITMENT TO:

- **Collaborate with businesses, development partners and other stakeholders to develop and implement an action plan** that will accelerate the supply of qualified human resources in critical areas of science, engineering and technology that will address Africa's development challenges;
- **Promote adoptive research for technology transfer**, giving it more weight to create competitive value chains;
- **Use FDI as a platform of technology capability accumulation** by higher education and research institutions;
- **Increase the share of students in sciences, engineering and technology** to serve strategic areas of Africa's development, such as agriculture, extractive industries, energy, ICT, health and environment and set national, sub-regional and regional target and set up mechanism to monitor these targets;
- **Promote and encourage regional solutions** including creation of regional partnerships and initiatives as well as the establishment of regional institutions and centers of excellence with the scale and finances to provide high quality specialized training and conduct strategic research linked to development needs;
- **To work together to support STI initiatives** for Africa's development that aim at strengthening higher education and other knowledge institutions and mechanisms;
- **Undertake reforms of the tertiary education systems to build science and technology capacity** including rebalancing the system towards increasing the number and quality of graduates with science and technology competencies, strengthening governance, and improving quality assurance and accountability for results;
- **Strengthen science and mathematics education at all levels** including a focus on science and mathematics at the primary and secondary levels with an emphasis on girls' science and math learning to ensure a supply of students interested in the field at post-secondary levels.
- **Increase female participation in Science, Engineering and Technology** in order to achieve gender parity in STI systems, including decision-making, education and employment;
- **Enable Research and Development to drive technological adaptation and innovation by businesses.** These include creating an enabling environment as well as explicit policies to encourage private-sector demand for science and technology;

- **Build public support for science, engineering and technology** by having inclusive and participatory process of formulating and implementing STI policies and programs;
- **Harness the African Diaspora** in order to tap into preexisting international networks and capitalize on the potential reservoir of talent and entrepreneurship in support of building science and technology capability;
- **Strengthen existing data sources and develop new sources of information and knowledge-sharing**, including an up to date solid statistics, and indicators of inputs, outputs, policies and outcomes of the STI system; and
- **Establish a mechanism/identify institutions for monitoring progress towards these commitments**, including reaching out to AMCOST and other regional bodies.