



# AFRICA'S CALL TO ACTION

*At a forum organized by the World Bank and Rwandan President Paul Kagame, TWAS joined African leaders in talks on building higher education to support science and technology.*

 by Edward W. Lempinen

**K**IGALI, Rwanda – Citing the close link between science and human prosperity, high-level representatives of five African nations ratified a far-reaching call for new policies, investments and global partnerships to improve university-level science and engineering education.

The call to action was approved during a forum organized by Rwandan President Paul Kagame and the World Bank, “Accelerating Africa’s Aspirations: Higher Education for Science, Technology and Innovation.” Science and education ministers from Ethiopia, Mozambique, Rwanda, Senegal and Uganda pledged an “ambitious commitment” to produce more African scientists and engineers who will be needed for the continued development for the continent’s 1 billion people.

“Our collective commitment must be followed by concrete action to drive innovation for the development of our people and our continent.”  Paul Kagame

The forum was attended by Kagame and leaders from the African Union, the African Development Bank, UNESCO, TWAS, IAP – the global network of science academies, and other influential advocates of Africa’s emerging knowledge economy.

“I welcome the commitment to strengthen and mobilise resources for building capacity in science and technology, in our pursuit of Africa’s socio-economic transformation,” Kagame said in the forum’s closing address on 13 March. “Our collective commitment must be followed by concrete action to drive innovation for the development of our people and our continent.”

Makhtar Diop, the World Bank’s vice president for Africa, also urged the forum participants to set transformative goals.

“To be more competitive, expand trade, and remove barriers to entering new markets, Africa must expand knowledge and expertise in science and technology,” Diop said in the keynote address. “Let us set some bold targets: that we will see a doubling of the share of university students graduating from African universities with degrees in mathematics, science and technology by 2025.”

The five-page communiqué ratified by the governmental representatives prescribed a range of efforts improve education and expand the corps of PhD scientists and engineers. Policies and resources are essential to increase enrollment – of women, especially – in science, technology, engineering and mathematics. The statement called for greater investment in information and communications technology and closer partnerships with business leaders and the African diaspora to build the strength of universities and technical schools. And researchers and policymakers must engage with the public to build broad support.

Among the key participants who shaped



▲ Left to right: Makhtar Diop, World Bank Vice President for Africa Region; Rwandan President Paul Kagame; and Rwandan Minister of Education Vincent Biruta at the closing of the forum. [Photo: Office of President Paul Kagame, Rwanda]

the final communiqué were Vincent Biruta, Rwanda's minister of education; Mary Teuw Niane, Senegal's minister of higher education and research; Jessica Alupo, Ugandan minister of education and sports; Ato Wondwossen Kiflu, Ethiopia's state minister for technical and vocational education and training in the Ministry of Education; and Arlindo Chilundo, Mozambique's deputy minister of education.

TWAS and some key partners had a significant role at the meeting. Mohamed H.A. Hassan,

has represented UNESCO on the TWAS Steering Committee.

The spirit of the meeting was hopeful, but there were stark concerns that complex, interlocking challenges could threaten future progress.

Many African nations are racing to build new universities and technical schools, with a clear focus on science, engineering and technology. But Africa's PhD deficit is profound. In the United States, there are 1,580 PhD scientists per million residents, and in South Korea nearly 1,200. African countries often have fewer than 100 scientists per million residents – and some have fewer than 20.

In coming decades, speakers said, Africa will need hundreds of thousands of new scientists and engineers in virtually every sector of the economy, from agriculture and health services to infrastructure engineering and adapting to climate change.

Some 40% of the population in sub-Saharan Africa is under 15, and today's students could provide the pool of talent to meet Africa's needs. Indeed, training them is essential – over the next decade, an estimated 11 million young people will enter the job market every year.

But the educational system, in its current condition, does not have the capacity to teach and train them, experts said at the forum.

"What we are gathered here to do has profound implications for young people in Africa," Tawhid Nawaz, the World Bank's director for Human Development in Africa, told the audience. "Essentially, young people can take advantage of economic opportunities only if they have the right knowledge and skills."

Hassan, in his keynote address on the first day of the forum, cited centres of excellence in science and engineering as "critically important" building blocks for every country. Not only do they attract top researchers, but they also attract political and funding support and become hubs of international cooperation. And, Hassan said, merit-based science academies can "mobilize accomplished scientists, mentor young talent and advise governments".

"The challenges of African higher education are enormous," Diop said. "Today, the tree of knowledge can grow only if we take care of the roots and the leaves." ■



co-chair of IAP and chairman of the Council of United Nations University, delivered the keynote address at the inaugural ceremony; Hassan is TWAS's treasurer and former executive director. Executive Director Romain Murenzi gave an address and chaired a panel that focused on S&T lessons from other nations. Fernando Quevedo, director of the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy, and a TWAS Fellow, spoke in a panel on the relationship between science and business in Africa's development. Lidia Brito, director of UNESCO's Division of Science Policy and Capacity Building, chaired a session that shaped the forum's final statement; she

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