



As Prepared for Delivery

Closing Plenary Address

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by

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Ladies and Gentlemen,

It is a great honour and privilege to be speaking at one of the world's premier and most respected institutions of higher learning. My privilege is heightened because MIT is known not only for its academic excellence but also for transforming science fiction into reality!

I would like to thank the organizers for the opportunity to join the 7th Africa Innovate Conference and to share my reflections on why it is critical to mobilize science and technology and innovation (STI) in addressing Africa's development deficits and providing opportunities to millions of Africans seeking pathways out of poverty, improved livelihoods and halting environmental degradation on the continent.

Friends: We meet at a consequential time in Africa's evolution. The crucial importance of science and technology, and more importantly, the need for the Continent to commit itself to the cause of excellence in science and technology for its continued and long-term sustained development cannot be over-emphasized.

According to the World Bank, economic growth in Sub-Saharan Africa was projected to fall to 1.6 percent in 2016, the lowest level in over two decades.

Low commodity prices, tight financial conditions, policy uncertainty, political and security concerns as well as the protracted drought in east Africa have all had an impact.

Fortunately, growth in the region is forecast to rebound to 2.9% in 2017 and hopefully rise above 3.5% by 2018.

We know the effects of low growth – development challenges are amplified, education suffers, public investments in health, nutrition, water and sanitation are hit, and poor people get pushed deeper into poverty.

Seen against the backdrop of these priorities, the STI agenda gets short shrift in policymaking discussions and public investments.

The "Poverty in a Rising Africa" reports, that the share of people living on less than \$1.90 a day fell from 56 percent in 1990 to 43 percent in 2012, while the number of poor still increased by more than 100 million (from 284 to 388 million).

Today, nearly two in five children are malnourished and one in eight women is underweight.

At the outset let me make my biases clear - as a former academician, life-long scientist, entrepreneur and now President, I sincerely believe that education, S&T and innovation have major roles to play in advancing knowledge for improving the everyday challenges faced by Africans.

Equally important is the need to marshal innovation, mobilize investment and strengthen Africa's academic institutions. That is why I am pleased to join my voice to the ongoing efforts to an education-led transformation for a stronger and more prosperous Africa, fully aligned with Vision 2063 of the African Union.

Tapping Africa's vast human, scientific and innovation potential will require vision, sound policies, and investment, backed by keen implementation capacity.

For starters, SSA's emerging economies need resources to conduct research that is creative, innovative and also adapted to local circumstances.

That makes me recall an example from South Korea.

The POSCO steel company set up the Pohang University to provide the needed S&T education: the school consistently tops domestic and international rankings and has received number one rating by the Times Higher Education's "100 Under 50" that ranks the top 100 universities under 50 years old.

Let me be very clear ... I believe that Africa's greatest untapped potential lies in its people, especially youth.

Today Africa is the youngest continent in the world. According to the Karolinska Institute, by 2050, the continent's population is projected to double and reach two billion.

Channeling the tremendous reservoir of human capital to productive sectors and sustainable use of natural resources will not only offer unrivaled economic and social opportunities, but also mobilize youth to the urgent task of national and regional development. This makes me think of the 12 year old inventor named Shubham Banerjee who received venture-capital funds from Intel to start his own company.

We need to build on this momentum and mobilize greater resources to consolidate each African university.

Our interventions must be guided by sound policies, increased investment and greater innovation, all backed by rigorous, science-based evidence which can help guide the creation of policies that are growth-inducing, fair, free from political bias and benign to the environment.

For brain gain, Africa's brain drain also needs to be addressed.

For Africa needs to take her rightful place in a fully integrated global economy and the conditions need to be created and sustained, where a technically-sound meritocracy can bloom, one that can connect the dots and accelerate the fight against myriad challenges requiring interdisciplinary approaches such as climate change.

Harnessing new technologies, promoting R&D, translating academic research through entrepreneurship, and securing intellectual property rights are all ways and means of boosting innovation, productivity, jobs and the ability to move up the production value chain.

One of the dominating features of the 21st century is the remarkable growth and ubiquity of global communications, affecting all facets of human endeavor.

Today, we take instantaneous communication – through the printed word, television and radio broadcasts, emails, faxes, telephones and social media – for granted.

The rapid rise of the social media – as a tool of information, instruction, and social mobilization – has been breathtaking, with Facebook ready to enter the history books as the third largest country “country” of “netizens” numbering over one billion and counting.

New ICT technologies have led to the new field of bioinformatics and genomics, a development that was instrumental in the decoding of the human genome.

According to the McKinsey Global Institute’s report “Big Data: the next frontier for innovation, competition and productivity” in 2010, people stored enough data to fill 60,000 Libraries of Congress.

The Internet is helping to bring education to millions. We must get beyond the traditional model of students sitting passively in classrooms, following instructions, and memorizing material.

Computers can do that for us! Rote learning is not commensurate with the needs of dynamic, knowledge-based economies and societies. Nor is it conducive to the cause of innovation, the subject of our conference.

Fundamentally, we need to change *what* people learn, *how* people learn, *when* people learn, and even *why* people learn?

Coursera, a massive open online course (MOOC) founded in Stanford now attracts more than 2.4 million students, taking 214 courses from 33 universities.

Closer home, some 155,000 students have taken courses at edX, a nonprofit MOOC jointly established by MIT and Harvard, a sum that exceeds total number of MIT alumni over its 150-year storied history.

The surge in communication capability is unprecedented in human history. Our collective challenge is to mold these tremendous forces and bring them to bear on the common, everyday problems facing Africans.

All these developments should also challenge us to think innovatively and creatively. On the African continent, success stories abound.

In Kenya’s, Lewa Wildlife Conservancy, radio collars are helping researchers to map migratory routes of elephants and prevent human-elephant conflict.

According to an influential article, “Networking Nature,” ICT innovations are making available more data to more people in more places and revealing the state of the world in unprecedented detail.

From Kenya’s M-pesa to Senegal’s Sonatel and Mali’s Ikon telemedicine program, we are witnessing remarkable strides African countries are taking in mobilizing ICT for

national development, improving governance, boosting accountability and positively impacting people's lives.

I call upon all conference delegates to use the power of your scholarship and help ignite innovation in key sectors – agriculture, energy, environment, health, trade and sustainable use and management of natural resources – that matter for Africa's future.

Ladies and Gentlemen,

Changes in demography, high population growth rates, rapid urbanization, slumping commodity prices and plummeting oil prices are all posing major challenges, threatening to reverse hard-won development gains.

I would be remiss if I did not address climate change and the fundamental threat it poses to balanced development in SSA.

Food production in SSA will need to increase by 60 percent over the next 15 years, and the agriculture sector will be hit hardest.

Without adaptation, Africa will suffer severe yield declines in important food growing areas, for example maize-growing areas across southern Africa.

Rainfall volatility is on the rise, particularly in the hyper-arid areas of the Sahelian zone.

Extreme weather events – droughts in eastern Africa, floods and cyclones in southern Africa – are increasing, in frequency as well as intensity.

In the agriculture and food sectors alone, we need a renaissance in education and training and for marshaling the benefits of innovation science to tackle the problems faced by African farmers.

Ladies and Gentlemen, given the limited time, I have only given you a fleeting snapshot of the major challenges facing our continent.

There are more. As a scientist, I lament that SSA with 12% of the global population only accounts for less than 1% of the world's research output.

And there was no African nation among the top 20 countries filing for patent applications in 2013.

To feed Africa and to keep her population in good health, we need to bring about Africa's institutional transformation.

We need partnerships, between public and private sectors, between academia and civil society, between scientists and non-scientists.

Partnerships are of the essence – between academia, public and private sectors as well as civil society and where such partnerships don't exist, let us create them keeping the common good in mind.

Ever since taking office in June 2015, I have had the privilege of being associated with launching of new partnerships such as the Alliance for Accelerating Excellence in Science in Africa (AESA) and the Coalition for African Research and Innovation (CARI).

Clearly, more partnerships are needed for marshaling innovation and making it fit for purpose in tackling Africa's development needs. In all these areas, women can and must become the drivers of change.

Fortunately, perceptions of Africa have changed dramatically over the past 20 years.

Frequently viewed as a continent of wars, famines, and entrenched poverty in the late 1990s, there is now a focus on "Africa Rising" and an "African 21st Century."

Throughout history, S&T has been instrumental in improving the human condition. That role will not diminish. It is our responsibility to wrest this momentum, craft a positive, hopeful narrative and bend it for social purpose.

When we talk about leveraging science and technology for development, we cannot be oblivious of the need to mobilise adequate funding for S&T research.

That's why I am pleased to join my voice in this ongoing effort to build a movement for science and technology in Africa geared towards sustainability. The African continent has had a record of sustained economic growth that should have been accompanied by a reduction in poverty and inequality, and increased opportunities for shared prosperity. Yet in some parts of the continent this is still not the case.

In September 2015, as part of its agenda for the next 15 years, the UN adopted a set of Sustainable Development Goals. They are the most sweeping, ambitious program ever undertaken by a global organization.

Their very name – sustainable – points to a limitation inherent in them: To reach them we are going to have to use resources that are more carefully stewarded than before, in ways that are more effective than ever before.

I believe now is the time to rededicate ourselves to achieving these goals by 2030.

Because sustainable development takes time, we cannot afford to fail yet another generation.

In the words of President Obama, our actions must be guided by the '*fierce urgency of now*'.

But we cannot abdicate our responsibilities, nor shirk from our commitment to excellence.

As Africans, we also need to become producers and not just consumers of knowledge and we should capitalize on the momentum gained at the global level, while recognizing that all actions are local.

Africans must be active and not passive in generating ideas. We must become activists and not pacifists for generating Africa-centric development solutions.

With these words, I would like to thank you for the opportunity of sharing my thoughts on why science and technology and innovation matter for securing sustainable development on the African continent that benefits all Africans.