

Research Application Summary

African Higher Education in the 21st Century: Blending Optimism with Reality

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Abstract

University education and its evolution in Africa has been closely linked with economic growth. The policy changes in the late 80's driven by World Bank / International Monetary fund (IMF) policy and scarce resources resulted in a singular focus on initially primary education and subsequently secondary education that effectively delinked the university from development discourse. Since then enrollment in higher education has increased dramatically from 181,000 in 1975 to over 5.4 million in 2012 and offers opportunity for tapping a large youth workforce by orienting and skilling them for agricultural-led development. But lack of articulation of the opportunities that education offers for economic growth through science, technology and innovation has left the sector with inadequate investment and attention effectively missing a key stimulant for economic development. Instead expenditure per student has decreased dramatically by over 82% in Sub-Saharan Africa with negative effect on the education system, including low overall quality and relevance. Despite current challenges, African universities hold promise for achieving the African Union's Agenda 2063 and the sustainable development goals by overcoming current and emerging challenges. African governments must do more to link policy to best practice through available evidence and more importantly to strengthen policy implementation. Many policy recommendations remain inadequately implemented. Higher education is at the cross roads and a stratified higher education system is needed which allows differentiation of universities that would ensure a strong contribution by universities to development goals and engages all stakeholders, particularly governments, students and potential employers to ensure relevant products. Greater investment will be required to rebuild Africa's expanded higher education sector, that allows greater south-south collaboration and upholds quality and development relevance. This paper provides key trends and experiences from Africa's higher education and highlights opportunities for harnessing higher education to deflect Africa's economic trajectory.

Key Words: Africa, high level skills for development, Postgraduate education, University Education, youth employment

Résumé

L'éducation universitaire et son évolution en Afrique sont étroitement liées à la croissance économique. Les changements de politique à la fin des années 80, guidés par le financement de la Banque mondiale et les ressources limitées, ont abouti à mettre un accent particulier

sur l'enseignement primaire et a réussi à délier les universités des dialogues concernant le développement. Depuis lors, les inscriptions à l'enseignement supérieur ont augmenté de façon spectaculaire, passant de 181.000 en 1975 à plus de 5,4 millions en 2012 et offre l'occasion de mobiliser une main-d'œuvre jeune et fortement axée sur l'agriculture. Mais le manque d'articulation des opportunités que l'éducation offre pour la croissance économique à travers la science et la technologie n'a pas attiré assez d'investissement dans le secteur et a plutôt réduit le développement économique. Au lieu de cela, les dépenses par étudiant ont diminué considérablement de plus de 82% en Afrique subsaharienne, ce qui a eu des effets négatifs sur l'ensemble du système éducatif, y compris la qualité et la pertinence médiocres. Malgré les défis actuels, les universités africaines sont prometteuses pour surmonter les défis actuels et émergents du développement économique de l'Afrique. Cependant, les gouvernements africains doivent faire davantage d'effort pour lier la politique aux preuves et renforcer la mise en œuvre des politiques. L'enseignement supérieur est à la croisée des chemins et promet d'exploiter une population jeune et dynamique. Il est nécessaire de disposer d'un système d'enseignement supérieur stratifié qui permet la différenciation des universités et engage toutes les parties prenantes, en particulier les gouvernements, les étudiants et les employeurs potentiels. Cet article présente les principales tendances et expériences de l'enseignement supérieur en Afrique et met en lumière les opportunités de mobiliser l'enseignement supérieur pour transformer la trajectoire économique de l'Afrique.

Mots-clés: l'Afrique, les compétences de haut niveau pour le développement, l'enseignement post-universitaire, l'enseignement universitaire, l'emploi des jeunes

Background

Higher education has entered a new paradigm. Following years of neglect, Africa's university education system has undergone a recognizable shift in perception from key stakeholders. Higher education is increasingly being prioritized by African governments and development partners alike and the expectation is that government and development partner funding will follow soon. Drivers of change include high population growth coupled with increasing throughput from primary and secondary education programs across the continent and resulting increased social demand; increasing urgency by African leaders to respond to broader poverty goals and the need for economic growth, globalization, including work of regional and sub-regional networks led by the African Union Commission and regional economic communities, climate change, among others. A key pivot was arguably a recent report by the World Bank (Montegro and Patrinos, 2014) that revealed that tertiary education and not primary or secondary education had the highest returns to investment in Africa and is instrumental to stimulate growth and economic development.

Human resource challenges at African universities began at their inception. Following the promise of growth at independence, the first generation of (few) researchers enjoyed high quality training and wide opportunities both within and overseas for training. Training included programs overseas such as the African Students Program in American Universities

¹An earlier paper by the World Bank (Psacharopoulos *et al.*, 1986) concluded the opposite and was the basis for policy reforms that focused development efforts on primary and secondary education.

(ASPUA) as well as in the Eastern republics particularly Russia, and benefitting from the ‘cold war’ dynamics (Mkwandawire, 1995). There was also a reverse trend seeing many Africans who had been privileged to study overseas or were in the diaspora returning home. African leaders worked towards industrialisation with urgency to ‘catch up’ with the West’. Similarly, there was a recognition that science and innovation was critical for development. In his first speech, President Kwame Nkrumah of Ghana characterised the optimism: *“We shall accumulate machinery and establish steel works, iron foundries and factories; we shall link the various states of our continent with communications; we shall astound the world with our hydroelectric power; we shall drain marshes and swamps, clear infested areas, feed the undernourished, and rid our people of parasites and disease. It is within the possibility of science and technology to make even the Sahara bloom into a vast field with verdant vegetation for agricultural and industrial developments²”*.

However, without adequate experience and knowledge on how to integrate cultural beliefs with a strong colonial heritage, the state continued to play a lead role in economic transformation agenda and initiatives. As such, nationalisation was prominent, inline with development thinking during the same period. In many countries, socialism, which spoke more directly to the African value system was preferred to capitalism, and education was only half heartedly pursued. President Julius Nyerere ‘Ujamaa’ philosophy was one such socialist experiment (Ibhawoh and Dibua, 2003) that led to a decline of Tanzania’s development policy from that of many western partners such as the United Kingdom. In principal however, the higher education sector like other sectors maintained on a similar trajectory with the colonial heritage.

So for many years then, many countries relied on export of cash crops such as coffee, tea, sisal etc. As such, there was less effort towards building grassroots level education to ready the people for economic engagement and growth. Many industrialization projects quickly became ‘white elephants’ such as President Nkrumah’s River Volta Dam Project which hoped to reap from bauxite sales, only to find much cheaper options from Jamaica (Miescher and Tsikata, 2010). The State led industries also struggled with corruption, mismanagement and ineffectiveness. Agricultural production remained low, total agricultural output grew only 1% per year, unable to match population growth (World Bank, 1998). When commodity prices began to fall, many countries reduced participation in international trade and focussed on barter trade resulting in reduced income revenue coupled with the numerous civil conflicts. The effects were far reaching, with many countries bordering on state collapse. Insufficient resourcing was equally felt in the higher education sector.

Modeled on counterparts in developed countries, from its early stages the African university failed to take on a form of its own. An early Conference of the Association of African Universities debated the role of African universities in the development process and how universities might contribute (Yesufu, 1973). Despite debate, there was little change of the African university. With exception of a few universities, institutional growth was devoid of differentiation in their mission, vision and structure, and yet the context could not have

² Extracted from the Science, technology and innovation strategy for Africa (STISA). African Union. Addis Ababa, 2014

³ Participation in the higher education sector grew from 4% to 8% by 2010 but still much below global average of 32%

been different. Higher Education participation increased 10 fold between 1975 to 1995 from 181,000 in 1975, to 600,000 in 1980 to over 1,750,000 by 1995 (World Bank, 2009). Without an educated populace,³ context specific knowledge production, and economic activities, it soon became obvious that national level growth was proving elusive. With Africa projected to experience a large population growth and entrants into the work force, Africa's higher education will be a key determinant for whether the Sustainable Development Goals will be met in Africa or not.

Literature summary

The fight against poverty in Africa remains daunting. Reports from the World Bank (2016) reveal that the number of poor living in poverty actually increased from 280 million in 1990 to 330 million in 2012. The same report reveals that poverty is more prominent in the rural areas and highest in fragile economies. So while on the one hand, Africa has demonstrated tremendous growth in the last two decades, with average of close to 5% annual GDP growth across the continent (these would have been higher if South Africa were excluded), progress in poverty reduction and inclusive growth continues to lag. The median person in Africa is now 18 years old, a significant 7 years younger than any other population (South Asia is the next youngest region of the World). By 2020, the over 200 million children born at the beginning of this Century will continue to enter the workforce over the next 15 years at a rate of 3% per annum. By 2050, Africa will have the world's largest workforce, surpassing China and India. Population growth will continue to impact on Africa's wealth. In an increasingly competitive and globalized system, contextualized, relevant knowledge is critical for stimulating innovation and growth (Cloete *et al.*, 2011).

The Higher education (HE) sector despite its many challenges provides the underpinning for building a science, technology and innovation sector. Universities are mandated to provide the knowledge required for development, prepare current and future workforce for productivity and to educate communities to make use of knowledge and technological packages that enhance productivity and value addition (Bloom *et al.*, 2006; Altbach, 2013). However, the sector faces critical challenges that constrain its ability to support the needs of the wider society, including for skills development and knowledge to support the implementation of these initiatives in Africa.

Education, and particularly, higher education is increasingly recognized as an important component of rural development strategies in sub-Saharan Africa (SSA). Education has been shown to explain a high proportion (over 40%) of overall inequality. The important role of higher education in nation building through research and innovation capacity in a highly competitive and increasingly globalized world is critical in enabling and maintaining economic growth and development. Studies on higher education and its benefits have demonstrated that increasing access to higher education will have broad impacts on society, including by molding citizens to participate more effectively in civil programs, improving individual incomes, enhancing nutrition and family wellbeing and strengthening workplace performance and effectiveness.

At the same time, investment in higher education have been shown to have high rates of return. USAID (2014) highlighted that private rates of returns to schooling are significantly higher in Sub-Saharan Africa than in any part of the world in part due to the low current education levels. Returns to investment in higher education are probably some of the highest possible at national level, with evidence of over 20% returns received on investment in this sector (World Bank, 2015). A more recent study by the National Bureau of Economic Research (NBER, 2016) revealed that growth in the university sector had a strong association with GDP growth in Africa. Higher education can play a critical role in accelerating growth from the current 4.5% annual average GDP growth rate for the last two decades (World Bank, 2016). Higher education institutions are being called upon to be more responsive to development needs, and as the sector develops, there are more calls for their differentiation to serve diverse needs of growing economies.

Opportunities for Africa's higher education. Africa's fast rising population will have consequences and the difference between a well-educated, skilled population and one that fails to make available higher education to a greater proportion of its working population will be significant for Africa and indeed for the world. Increased population growth and the success of primary and secondary education programs have led to rising demand for university sector education. The resulting growth of the sector has been evidenced in increasing enrollments at all levels. For example in Ghana, enrollment increased close to 25 times from just 9000 in 1976 to over 217,543 in 2010 (Table 1). This trend was apparent across the continent, as seen in Uganda, with growth from 5,000 in 1970 to over 120,000 in 2010. In South Africa, enrollment increased to over 1 million students in 2015 with 968,890 within the 26 public universities alone, a doubling from the position in 1993. In Malawi, enrollment increased over 166 times, from 90 students in 1965 to 15,000 students in 2015.

However, access to university education has remained a challenge for the disadvantaged, including the poor as access has remained limited to the economically advantaged and better 'connected'. Competition for access to the few science programs is even higher. In Ghana, less than 1 in 10 applicants were able to access a place within an STI program in Ghanaian universities (Table 2). This number has slightly increased over the years since 2004. The competition for places was slightly less in areas outside Accra, the Capital city. Similarly, female enrollment remains lower than for men, particularly at post graduate programs and for universities that are outside the key urban areas. For the agricultural programs, the number of females is often even lower. Interestingly, evidence from returns to investment studies for higher education showed higher returns for women than for men (Psacharopoulos and Patrinos, 2004; World Bank, 2014). Amoah *et al.* (2016) provide key reasons why students preferred non-agricultural programs from the students' perspective as being the rising academic facility user fees paid at the School of Agriculture University of Cape Coast compared to sister colleges. The increase in academic facility user fee is due to the supervised internship training and country-wide agricultural tour introduced by the School to enhance experiential learning. This practical aspect is different from

⁴ Psacharopoulos and Patrinos (2004) had earlier claimed that that private returns to primary education at the global level were at 26% compared to only 19% for tertiary education. Social returns to schooling were similar.

⁵ Africa has current fertility rate close to 7 children per woman, compared to global average of 2.5 children, half as many as in 1960-65 and not much above the 2.1 at which the world population will stabilize. Source: <http://www.economist.com/news/briefing/21679781-fertility-rates-falling-more-slowly-anywhere-else-africa-faces-population>

the Agricultural programs in sister institutions. Experimental learning will be increasingly important for enhancing the higher education system and will require investments. An improved and relevant education will require greater investments in higher education.

University expansion. Universities can be characterized into five broad types based on their establishment. 1) Historical universities were those that were established prior to World War 1. Examples are the Al-Quarawiyin University established in 859 AD at Fez in Morocco and Al-Azhar University in 970AD in Cairo, Egypt (Lulat, 2005). Most of these universities were in north Africa; 2) Post Berlin conference universities/ institutions including Fourah Bay College in Freetown, Sierra Leone (1827); University of Cape Town (1829); Stellenbosch University (1866), University of Khartoum (1902), Cairo University (1908) and the University of Algeria (1909); 3) Between World War 1 and pre-Independence another set of universities were established including Makerere University (1922) of Uganda, Egerton University (1939) of Kenya, University of Ghana (1948), University of Ibadan (1948) of Nigeria, Addis Ababa University (1950) of Ethiopia and University of Zimbabwe (1952) (Dantew, 2003 in Woldegiorgis and Doevevspeck, 2013); 4) Post-independence saw a flurry of universities being set up, usually with at least one university per country and later even more up until the end of the Century. Examples include the University of Mauritius (1965); Eduardo Mondlane University (1962) and University of Hassan II Casablanca Ain Chok in Morocco (1975); 5). Post 2000 saw a mushrooming of universities including many private universities, as a result of liberalization of policies. A more comprehensive description on the history of universities is provided by Woldegiorgis and Doevevspeck (2013).

Table 2: Number of graduates and applicants for the five main universities offering programs in STI and agriculture from 2004/2005 to 2013/2014 academic year in Ghana

Year	UG		KNUST		UCC		UEW		UDS	
	Grads.	Applicants								
2004/05	3,752	19,421	2,280	13,267		14,749		6,838	141	3,535
200/06	4,066	21,999	3,185	18,303	2,104	14,229	3,013	8,796	317	4,320
2006/07	6,426	18,215	3,239	19,722	3,113	16,363	2,559	7,841	834	4,709
2007/08	6,379	22,708	3,314	18,544	6,193	14,883	3,788	9,607	-	7,207
2008/09	6,696	27,795	4,749	16,975	4,681	13,935	5,558	12,119	-	7,619
2009/10	10,914	34,092	5,537	19,766	3,761	14,896	9,547	9,340	1,453	-
2010/11	8,059	29,175	5,445	28,178	4,926	16,937	8,245	13,672	2,033	15,351
2011/12	7,259	36,330	5,643	33,430	4,103	-	18,572	-	2,186	-
2012/13	8,324	42,083	6,305	42,582	4,926	14,562	17,841	11,702	2,536	11,244
2013/14	7,711	78,618	8,199	57,277	3,932	17,008	16,567	13,074	5,380	19,450
Total	69,586	330,436	47,896	268,044	37,739	137,562	85,690	92,989	14,880	73,435

Key: UG- University of Ghana; KNUST -Kwame Nkrumah University of Science and Technology; UCC -University of Cape Coast; UEW -University of Education Winneba; UDS -University for Development Studies; Source: Amoah *et al.*, 2016.

Table 1: Student enrollment (total) at African universities by country

Country	Student enrollment by year		
	1970	2000	2015
Uganda	5,000	60,000	120,646 (2010)
Kenya	1,000	59,193	324,560 (2013)
Ghana	9,000 (1976)	86,570	217,543 (2010)
Nigeria	19,000	358,758	1,375,671
Malawi	90 (1965)	4,304 (2001)	15,000
South Africa	473,000 (1993)	799,658 (2008)	968,890 (2014-Public Univ.)
Egypt	n/a	1,167,891 (1999)	2,646,000 (2010)
Morocco	n/a	60,000	603,626 (2014)

Growth in the number of higher education institution has paralleled student enrollment, from just one university at the time of independence within each country, to almost 30 and more universities per country (Table 3). The greatest increase in the number of universities have come in the recent few years with largest growth seen amongst private universities. However despite this, private universities still account for a smaller proportion of total enrollments, usually less than 20% due to much larger student populations in public universities. In either case, private university education is challenged by lack of PhD qualified staff, infrastructure challenges and weak quality assurance systems. Expansion has also been in the number of campuses being run by various universities in a bid to provide wide access to rural and other populations. Public universities here also turned to private students through 'pararell' programs. The University of Addis Ababa that was established in 1950, currently has 14 campuses across the country (Shibru *et al.*, 2016). Although the number of graduate enrollments are increasing, its share remains low, and only a small proportion of the estimated 1500 public and private universities in Africa offer graduate programs (Hayward and Ncayiyana, 2014; Osiru *et al.*, 2016).

As a result of the growing sector, the education budget, as a share of the national budget of most countries on the continent has continued to increase. In Ethiopia (Fig. 1) the education budget increased from 5 billion to 40 billion Birr within the ten year period from 2003 by 2013. However, due to the high increase in the number of student, the expenditure per student continues to reduce with implications to the quality of education being provided (World Bank, 2009).

Higher education challenges in Africa. The potential for higher education to contribute to economic development in Africa is now well recognized by key development stakeholders including development partners and governments. However, the challenges that must be overcome are both varied and immense. During a convening of Vice Chancellors at the recently concluded Biennial Conference of the Regional Universities Forum For Capacity Building in Agriculture (RUFORUM) in October 2016 in Cape Town South Africa, participants representing over 66 universities from across the continent discussed and agreed on key challenges that need to be overcome in order to harness the potential of higher education in Africa.

Table 3: No of public and private universities in selected countries

Country	Year	No of Universities by year	No. of Private Universities	No. of Public Universities
Uganda	2016	46	39	7
Kenya	2015	60	37	23
Ghana	2016	36	27	9
Nigeria	2016	152	68	84 (40 federal and 44 State Universities)
Malawi	2016	22	18	4
South Africa	2014	26	-	26
Egypt	2016	43	23	20
Morocco	2016	18	5	13
Total		403	217	186

1. Postgraduate education remains insignificant as highlighted by the very low share of research output in Africa, currently at less than 3%. In many cases, enrolment in postgraduate programs are too small to be cost effective (Osiru *et al.*, 2016). The inadequate resourcing for postgraduate education remains a critical challenge constraining African universities from playing their rightful role in the higher education sector. Even where resources are available, majority of funding for research at universities is provided by development partners in most countries with little from African governments. As a result, research focus is prone to external forces and is short term in nature. The expansion of the sector without parallel income in PhD qualified staffing further exacerbates this issue.

2). University research and other activities remain delinked from potential users, including employers and rural communities. Often knowledge generated is not directly relevant to users, and particularly small scale farmers in Africa. As such, there is little translation of research results into actionable programs nor into industrial and other applications.

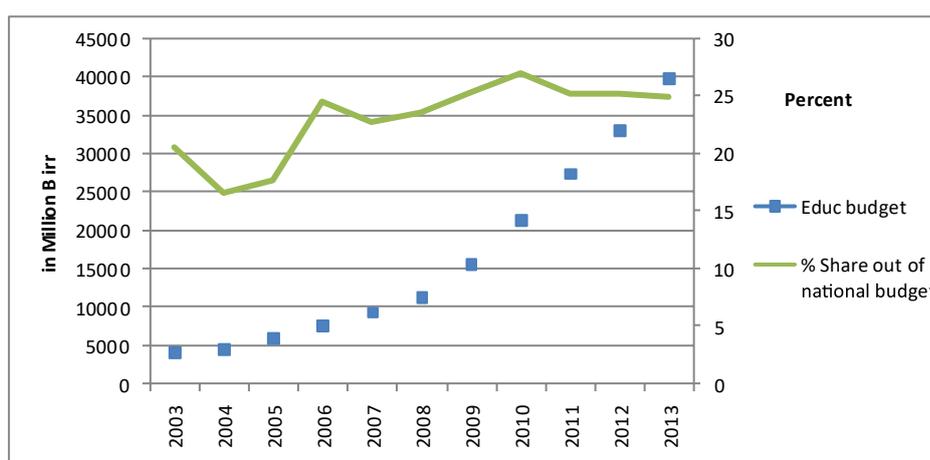


Figure 1. Education expenditure (in Million Birr) and share of the Education sector (%): Data Source: Shibrú *et al.*, 2016 and Ethiopian Education Statistical Abstract

Invariably, universities are in regular disagreement with governments who struggle to see their relevance and contribution. Governments thus engage university expertise individually and not as an institution. There is little linkage between the university and private sector and knowledge generated largely 'sits on shelves!

3). The expansion in the university sector has further highlighted challenges of inadequate staff capacity. For the older universities, 'moonlighting' where new universities hire staff from existing universities on part time basis is increasing in frequency. There is inadequate number of PhD qualified staff (PhD level staff in most universities range between 20-40% of academic staffing) in existing, let alone for the current and future emerging universities.

4). Training programs remain weak, resulting in training outside Africa at a high cost. This further increases risks of staff not returning to home institutions in Africa where infrastructure and incentives systems do not encourage knowledge production, nor community engagement. In addition, sectarianism within universities has become an increasing challenge as various tribal groups and regions clamor for setting up universities to serve their own needs.

5). Institutional knowledge is not adequately maintained. Universities have weak monitoring, evaluation and learning mechanisms with disciplinary silos that do not take advantage of existing expertise in the region. There are also limited mentorship and surrogacy programs. At the national and regional levels there is little information to assist in the identification of strong and weak programs at African universities. A simple ranking system would help to highlight and provide performance improvements and facilitate student identification of program of interest.

6). Leadership and management at various levels is weak as potential candidates do not have adequate leadership and management experience nor the required skills. As staff perform well in their respective fields of expertise, they transition from technical functions to administrative roles without adequate training in this area. Additionally mechanisms for selection of vice chancellors and rectors often do not fully take into account the job needs.

7). Access to higher education remains lower for women and the disadvantaged. Many universities are training the upper social economic quintiles with little room for those from disadvantaged communities to access higher education.

8). Universities are churning out graduates who are not well equipped for the job market and lack key transversal skills, in addition to other skills sets that are needed by growing African economies.

9). Financing mechanisms have remained static for a long time, and often leave universities dependant on the state for funding. This has resulted in various challenges including frequent strikes and riots at universities.

Conclusion

Despite the growth in Africa's higher education sector, participation in Africa's higher education sector still remains below 9% on the continent compared to a global average of 32%. This remains significantly less than participation in the OECD (85%). Within this context there is broad agreement that Africa needs to produce significantly more Masters and PhDs to renew an ageing professoriate, to rapidly provide quality academic staff to the ever expanding higher education sector, to boost research and to generate the high-level skills that the continent's growing economies need. However, in addition to further expanding university participation, transformation must take place to ensure that the universities can better contribute to development. The following recommendations are provided for strengthening Africa's higher education sector.

1. The growth in universities, and particularly in the private university sector call for greater focus on quality assurance mechanisms on the continent in recognition of the changed role for governments within the education sector. One lesson from the rest of the world would be to put in place ranking systems, but based on contextual criteria. Greater collaboration is also needed between national councils for higher education to improve accreditation mechanisms as well as systems for incentive/ sanctions to improve higher education quality;
2. The scale and scope as well as the public good nature of higher education require that governments play key roles in supporting higher education in Africa. In an increasingly globalized world, Africa must enhance its competitiveness through enhancing use of science, technology and innovation (STI) to drive economic growth in the Continent. African Heads of State in 2014 approved the Science, Technology and Innovation Strategy for Africa (STISA, 2024) to support the mainstreaming of STI to drive economic growth in Africa. African leaders have recognized the need to enhance STI capacity but commitment as well as periodic analytical support and guidance from technical experts to explore strategies for stimulating sustainable STI growth in the continent is still limited for example few countries have implemented the agreement of spending to 1% of GDP for science, technology and innovation.
3. The globalization of education delivery has further opened up African universities to global competition. In order to increase access to quality education, use of IT tools must be explored such as massive online open courses (MOOCs) and other open source learning materials. There is need to strengthen use of ICTs to improve the decentralization of teaching and learning, enhance access to the wider public, and also reduce the costs of education in Africa;
4. African higher education needs to produce graduates and research that will increase the use of science, technology and innovation for economic growth and ensure an Africa that is food and nutrition secure. Investments are needed to develop and strengthen local post-graduate programs and to transform universities so that they use modern technologies applied to local situations to provide the human resources that Africa needs for tomorrow.

Policies are thus needed at all levels, including at the continental level to enhance the sharing of resources and use of comparative advantages. Opportunities such as the Committee of 10 African Heads of State and Government Championing Higher Education, Science and Technology need to be well harnessed.

5. Universities in Africa need to innovate proactive curricular reforms and delivery taking into account the rapidly changing global academic landscape in demand and supply. The need for greater investment by youth in the agricultural sector outside the formal public sector requires different skill sets and altitudes which educational institutions need to respond to.

6. Improve the relevance, quality, governance and community impact of higher education institutions, including putting in place relevant frameworks. This should be done by various strategies, including strengthening private sector links/partnerships/collaborations as enablers for transforming African higher education quality and relevance with a view to uplifting agribusiness institutions and lives of peoples of Africa.

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