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Research Application Summary

Responding to key gaps in Africa's Higher Agricultural Education: Lessons from the Regional Universities Forum for Capacity Building in Agriculture

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Abstract

In 2014, African Heads of State and Government signed the Malabo Declaration, signaling a change in gear in the implementation of the Comprehensive African Agricultural Development Program (CAADP) and related processes in Africa. The road from Maputo to Malabo has witnessed important changes in various trends. Changing trends include population growth, youth employment prospects, on-farm production as well as post farm value addition practices by small scale farmers, among others. Parallel to this has been the growth evolution of the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) network, as a platform organization for facilitating the transformation of Africa's agricultural higher education. The paper discusses key issues in Africa's higher agricultural education sector in light of RUFORUM's role in support of the African Union led CAADP agenda. The paper follows the growth of RUFORUM, identifying key drivers for its evolution. RUFORUM was created to support African Universities to support the implementation of national CAADP investment plans. RUFORUM's growth and future direction is guided by important lessons for enhancing agricultural transformation in Africa. These include increasing engagement of the private sector, paying greater attention to partnerships to enhance scaling of best practices, increasing academic mobility and use of ICTs to improve higher education quality and staffing at universities. A key element is producing graduates who are not only employable, but increasingly able to create employment opportunities that are linked to value addition in the agricultural sector but also willing to work in rural areas for community transformation.

Key words: CAADP, graduates, Higher Agricultural Education, RUFORUM, skills for development

Résumé

En 2014, les chefs d'Etat et des gouvernements africains ont signé la Déclaration de Malabo, signalant un changement de vitesse dans la mise en œuvre du Programme Détaillé de Développement Agricole de l'Afrique (PDDAA) et les processus connexes en Afrique. La route de Maputo à Malabo a connu des changements importants dans les diverses tendances.

L'évolution des tendances comprennent entre autres la croissance démographique, les perspectives d'emploi des jeunes, la production à la ferme ainsi que les pratiques d'addition de valeur agricole par les petits exploitants agricoles. Parallèlement à cela a été l'évolution de la croissance du Forum régional des universités pour le renforcement des capacités en agriculture (RUFORUM), en tant qu'organisation plate-forme pour faciliter la transformation de l'enseignement supérieur agricole en Afrique. Ce document aborde les questions clés du secteur de l'éducation supérieure agricole en Afrique à la lumière du rôle de RUFORUM dans l'appui de l'agenda du PDDAA dirigé par l'Union africaine. Le document suit la croissance de RUFORUM, en identifiant les principaux facteurs clés de son évolution. RUFORUM a été créé pour appuyer les universités africaines pour soutenir la mise en œuvre des plans nationaux d'investissement du PDDAA. La croissance et la direction future de RUFORUM sont guidées par des leçons importantes pour le renforcement de la transformation agricole en Afrique. Celles-ci comprennent l'augmentation de l'engagement du secteur privé, en accordant une attention toute particulière aux partenariats pour l'expansion de l'échelle des meilleures pratiques, en augmentant la mobilité académique et l'utilisation des TICs pour améliorer la qualité de l'éducation supérieure et du recrutement du personnel dans les universités. Un élément clé est la production des diplômés qui sont non seulement aptes au travail, mais de plus en plus en mesure de créer des possibilités d'emploi liées à la valeur ajoutée dans le secteur agricole mais aussi prêts à travailler dans les zones rurales pour la transformation de la communauté.

Mots clés: PDDAA, les diplômés, l'enseignement supérieur agricole, RUFORUM, les compétences pour le développement

Background

The Comprehensive African Agricultural Development Program (CAADP), established in Maputo by African Heads of State in 2003, is Africa's overall framework for guiding agricultural development in Africa. The CAADP was renewed in 2014 by agreements made in the Malabo Declaration that highlighted new targets for achieving CAADP targets (2014 to 2025) by all stakeholders in line with overall African vision as encapsulated in the African Union (AU) Agenda 2063. The Malabo Declaration was approved by Heads of State in 2014 as the overarching targets in sustenance of CAADP for the agricultural sector. It is aligned to the Science Technology and Innovation Strategy for Africa (STISA 2024).

An assessment of Phase 1 implementation of CAADP (2003-2014) highlights the importance of doing 'business unusual', to ensure that greater momentum can be garnered towards economic growth and achievement of AU Agenda 2063. The need to put in place the required human capacity and relevant resources for supporting implementation has been highlighted as a critical limitation for CAADP implementation. This issue has also been highlighted at the implementation level, by reviews of national agricultural investment plans (NAIPs) (African Union, 2015b; Bahiigwa *et al.*, 2015; Benin, 2015). The need to enhance overall research output and its use to support the CAADP process and indeed overall national economic growth, remains critical. Implementation success is closely linked to the capacity of institutions and limited by available human resource capacity. The current financing models

to support research in Africa are largely externally driven, characterized by short term initiatives which limit the capacity of higher education institutions to address long terms human resource challenges for development.

There is an urgent need to facilitate higher agricultural education institutions to transform themselves to produce relevant graduates to support the CAADP processes and achievement of broader economic development in Africa. CAADP Phase one recognized the importance of harnessing existing capacities on the Continent and reducing duplication of initiatives by providing some attention to regional initiatives with overall coordination by the New Partnership for Africa's Developments Planning and Coordinating Agency (NPCA). Despite its shortcomings, the CAADP process has had a number of key achievements, as highlighted in the recently launched report by the Alliance for a Green Revolution in Africa (AGRA, 2016). AGRA cites key achievements from Phase 1 as being 'innovations in promoting an evidence-based policy planning and implementation, strengthening inclusive review, dialogue, and mutual accountability platforms, promoting alignment and coordination of development partnerships in agriculture, and raising the level of agricultural expenditure by African countries'. Capacity remains a key challenge for enhancing implementation of CAADP, and particularly in light of emerging mega-trends in African agriculture that are changing both on-farm and off-farm characteristics. The transition from the Maputo Declaration to Malabo, underpinned by implementation of arrangements from the 'pillar institution' to other mechanisms such as the nascent technical networks highlights the broader challenges of driving the pan-African led CAADP process.

Experiences from networks such as the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) highlight that there is scope for enhancing cross university collaboration for supporting the transformation of higher education, for facilitating the achievement of enabling policy environment for strengthening skills development, and for linking weaker departments to stronger ones as a mechanism for strengthening the overall quality of higher education in Africa. RUFORUM is a network of 60 universities operating in 25 African countries with mission is to '*strengthen the capacities of Universities to foster innovations responsive to the demands of smallholder farmers and value chains through the training of high quality researchers, the output of impact-oriented research, and the maintenance of collaborative working relations among researchers, farmers, market actors, national agricultural research and advocacy institutions, and governments*'.

This paper highlights issues for the higher education sector in Africa, with particular reference to the agricultural sector. It highlights the key drivers for the transformation of the higher agricultural education sector in Africa in producing relevant graduates to support CAADP implementation. It further provides a spotlight on the evolution of RUFORUM and lessons from its growth, success and challenges. Finally, the paper concludes with thoughts for the way forward for higher agricultural education in Africa in support of STISA priority 1 (eradicating hunger and ensuring food and nutrition security) and the CAADP.

Literature summary

Challenges in the agricultural sector need to be viewed in the overall context of continental trends. Population growth in Africa is expected to increase four fold to over 4 billion by 2050 (Jayne and Ameyaw, 2016; United Nations, 2016). This high growth rate implies not only the need to significantly enhance food production in Africa, but also the need to improve household incomes in Africa if the African Union vision in the AU Agenda 2063 is to be achieved. The explosive growth has led to a disproportionately high number of youth, which has previously been described as the 'Youth bulge' in Africa (Fox and Gaal, 2008; Ortiz and Cummins, 2011; Filmer and Fox, 2014). The large number of youth, highlights the importance of enhancing education systems to harness this tremendous opportunity. Previous reports have correctly highlighted the critical need to educate the youth, or face the consequences of a large population of energetic but redundant minds.

The increasing calls by development partners and agricultural stakeholders for impact at farmer level (Scarborough *et al.*, 1997; Pingali *et al.*, 2016) is thus justified with implications for roles and implementation arrangements of the traditional implementers. It also implies the need to review the concepts that do not recognize the need for the use of public goods for private gain. As formal employment opportunities become limited, employment creation through greater entrepreneurship talent is most practical. Further thinking is required on how to ensure that 'entrepreneurs' can protect their profit potential from 'technologies' arising from public research, if public investments are going to be the key means of driving development. Engagement of the private sector in Africa will become increasingly important to increase availability of resources and to improve sustainability. These challenges have also been highlighted and drive call for reforms in public institutions such as the 15 centers of the Consultative Group on International Agricultural Research (CGIAR, 2015).

The Higher Agricultural Education Sector, and indeed the wider Higher Education Sector has itself grown significantly over the past few years. Participants in the higher education sector increased from 200,000 in the 1970s to 4.5 million in 2008. By 2013, this number was over 6.3 million (UNESCO, 2010; USAID, 2014). However, gross enrollment remains low in SSA at less than 8% (global average is 30.1%) (USAID, 2014). Higher education institutions (HEIs) are thus challenged to respond to new demands that have arisen from universal primary and secondary education programs that are being implemented across Africa and mooted by the World Bank in Africa (Teferra, 2003; Osiru *et al.*, 2016). 'Massification' and creation of 'new' universities has led to other challenges, including weak staffing, particularly for PhD qualified staff, inadequate infrastructure such as classrooms, dormitories etc, particularly for the science disciplines and low research output. Higher Education Institutions thus face the dual challenge of trying to mobilize funding that is increasingly won through competitive processes without adequate PhD qualified staffing in place (Osiru *et al.*, 2016). This conundrum requires innovative means to respond. Similarly, the skills and competencies required by employers and for employment creation continue to evolve in line with global and continental trends. African faculties of agriculture have equally been affected by these challenges.

Genesis of RUFORUM

The Forum on Agricultural Resource Husbandry (FORUM). RUFORUM's predecessor, the Forum on Agricultural Resource Husbandry (FORUM), a program of the Rockefeller Foundation Africa Office, was created to respond to the significant shortages of appropriately trained development specialists (particularly at the MSc level) (Patel and Woome, 2000). The program exceeded the expectations of stakeholders and resulted in strengthening of postgraduate training in selected universities with a number of important outcomes for the Eastern, Central and Southern Africa region where it was implemented (Woome and Blackie, 2005). With an investment of just over US\$13 million over 10 years starting in 1992, the program through a competitive grants program (Fig. 1) achieved among others:

- (i) A rejuvenation and reinvigoration of research activities addressing smallholder food production and re-orientation of M.Sc. training towards a field/community approach;
- (ii) Improvement of conditions for faculty staff and students and student-staff relations;
- (iii) Facilitation of student completion for M.Sc. training (30 months) and strengthened human capacity both for university and community service;
- (iv) Inducing more rapid career advancement by better-published scientists with several grantees becoming deans, department chairs and full professors during the subsequent periods to participation. Grantees were also able to win further grants from other funders;
- (v) Contributing to skilled professionals throughout the agricultural sector and provided incentives for staff retention at African faculties of agriculture. Graduates discovered ready employment in research organizations (26%), universities (18%), NGOs (14%), government service (12%) and industry (12%) or sought more advanced degrees (18%).

Establishment of RUFORUM. The establishment of RUFORUM was built on the Foundation of the FORUM program in 2004, following decision by the participating 10 African Vice Chancellors (VCs) who recognized the important need for African Universities to respond to the then challenges of the agricultural sector. The VCs also recognized the need for universities to better exploit their capacities in responding to national and regional challenges within the agricultural sector in Africa. RUFORUM's creation was quickly followed by an inclusive strategic planning process in 2005 that led to the first Strategic Plan for RUFORUM (2006-2010). The strategic planning process was designed by Deans of the 10 constituent Faculties of Agriculture that were members of RUFORUM at its creation in 2004. A key challenge was how to add value to activities of its constituents (universities) and their national level activities to justify regional level aggregation. Five national stakeholder workshops were held in the participating countries Kenya, Malawi, Mozambique, Uganda, and Zimbabwe (sic). The consultation process recognised the need to ensure that the vision and mission of the organisation '...reflected the aspirations of the constituent universities and countries'. Subsequently a three person RUFORUM coordinating Secretariat was

located at Makerere University, following a bid to the Rockefeller Foundation by the Government of Uganda. The key strategic focus was to develop relevant and efficient human resources at mid-career (Masters) and at PhD levels to play key roles in national development. The modus operandi accentuated the rationalization of existing facilities of members and partners to support continental training needs. RUFORUM recognized that certain programs were undertaking important training for implementing CAADP and yet lacked some basic ingredients for success. It innovated around how to support these programs to be more successful. RUFORUM's role was thus seen as a 'catalyst' and 'stimulator' to provide support to get programs off the ground. At inception, the Program focused on a tested and adapted competitive grants program from the FORUM program (Fig. 1).

Introduction of Regional Masters and PhD programs. In 2005, discussion around RUFORUM's strategic framework and the CAADP highlighted the need for universities to escalate both Masters and PhD training, in line with the newly developed Strategic Plan. Based on comparative advantage, RUFORUM Deans selected universities to host key thematic programs for which capacity was low but critical for CAADP implementation. The principle was to understand from research institutions, universities and other key employers the current demands for skill and competencies in graduates as well as staffing needs. The resulting regional Masters and PhD programs were thus tailored to respond directly to the challenges. The Vice Chancellors had previously agreed on a set of rules to support their participation in RUFORUM, key elements being to accept foreign students into their universities at local fee rates, to allow for mobility of teaching staff, and to rely on the Kampala based Secretariat to support coordination and management of regional programs and to provide oversight and direct input to the agricultural programs. PhD programs, which

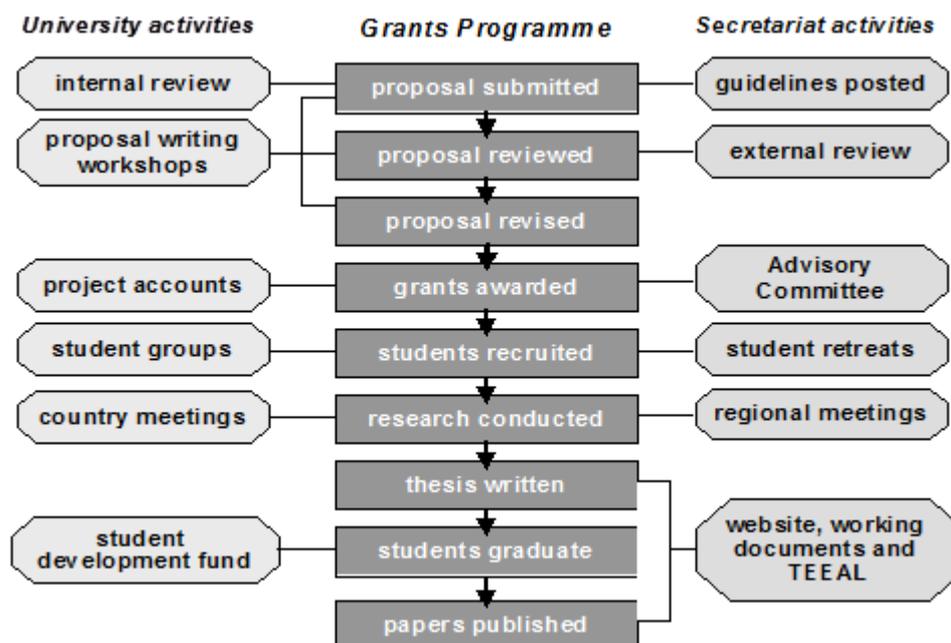


Figure 1. The FORUM Competitive Grants Award Process 1992-2002

previously had been offered by research only were limited to three years in duration with a one year course work element included. The National Agricultural Research Institutions (NARIs) consulted called for a means to ensure that staff development would allow staff to remain attached to their institutions, and to return in the shortest time possible. The inclusion of course work was unanimously agreed to by the universities, recognizing that students would be coming from many countries with unknown quality of the 'pipeline' to study in the regional programs and to adequately prepare them for doctoral studies. The first set of regional programs were initiated in 2008.

RUFORUM Governance and Ownership. Peculiar in its evolution, RUFORUM is an African owned, membership based association of African Vice Chancellors/ universities. University pay a membership fee of US\$5000 per year annually and its services are 'demand driven'. RUFORUM was initially set up as a private (not for profit) company limited by guarantee with the 10 African vice chancellors as directors. In 2009, this status was changed as RUFORUM was registered as an International NGO. A committee of Principals and Deans was established to support academic training and oversee student supervision and mentorship of the program. Another key organ, the National Forums were created involving universities within each country where RUFORUM operated and key stakeholders, including policy, private sector, NGOs, research and extension. The National Forum's key function was to receive feedback from key stakeholders on university training and outreach programs within the country. They also ensured priority setting at national level, for aggregation to the regional level of organization. A Technical Committee provided technical advice to the Secretariat on all programs and the International Advisory Panel (IAP, consisting of 8 internal experts, four from within and 4 from outside Africa) was tasked with facilitating the orientation of RUFORUM at the international level, including with development partners, governments and other stakeholders and to keep RUFORUM abreast of international developments. The IAP also was created to support the RUFORUM Executive Secretary with regular strategic advice.

RUFORUM growth and evolution. In 2011, RUFORUM developed a second Business Plan (2011-2016) that arranged RUFORUM operations around a vision of '...vibrant agricultural sector linked to African universities that can produce high-performing graduates and high-quality research responsive to the demands of Africa's farmers for innovations, and able to generate sustainable livelihoods and national economic development'. RUFORUM consolidated its activities around two programmatic areas in research (CGS) and institutional strengthening and regional training programs, underpinned by two support functions of M&E and ICT that serve both the RUFORUM Secretariat's own functions as well as potential methodological and support services to RUFORUM member universities. The Network's strengthening constituted a fifth core area. Demand for RUFORUM's services by universities was highlighted in its growth with growth in membership from the original 10 universities to initially 25 in 2010 and 29 in 2011. In 2012, six more universities joined bringing membership to 35 universities in 2012. Today, membership stands at 60 universities across all the five regions of Africa (Central, Eastern, North, Southern and West Africa). With enhanced visibility, RUFORUM was able to attract a large number of grants and demand for its engagement in various programs and projects such as the Tertiary Education for Agriculture

Initiative and other networks. The growth however, highlighted a clear need to streamline operations for effectiveness and efficiency at the Secretariat. RUFORUM was successful in demonstrating that universities could achieve impact at community level through its community action research program, and work on value chains with multi-stakeholders. Through its capacity building activities, by 2014, a total of 1071 Masters and 212 PhD graduates were trained, who are now working in various countries, almost all on the continent. Today, RUFORUM has supported the training of 1433 Masters and over 350 PhD graduates in Africa, 94% of whom are living and working in Africa (RUFORUM, 2014).

Engagement of a wider range of universities brought into the fold new members, with diverse capacities, including private universities, and recently established African universities with nascent Masters and PhD programs. At platform level, this increased the need for a wider diversity of services based on needs of the new members. Specifically, the RUFORUM CGS required greater focus and capacity to ensure greater competition across members. The RUFORUM Secretariat found it critical to address the disparity in the quality of proposals being submitted across universities. Stronger universities were characterized by strong internal review processes and institutional support provided to staff to develop and review proposals. Thus, RUFORUM initiated processes to enhance capacity building for proposal writing, targeted to newer universities and weaker universities based on submission history. The Technical Committee also advised the exploration of ‘institutional strengthening grants’ to improve capacities of weaker universities to participate more actively in the CGS. The CGS monitoring and evaluation processes were also strengthened. Further, disciplinary focus moved from the crop and natural resource sciences, towards greater attention to livestock, and the basic sciences in support of agriculture. The platform broadly focused the attention of African vice chancellors to agriculture, but since 2014 the efforts have been broadened to encompass the broader science, technology and innovation.

RUFORUM as a continental platform for African higher agricultural education. As articulated by the Bill and Melinda Gates Foundation Externally Commissioned review on RUFORUM, the growth of RUFORUM and ‘.....expansion in member universities from the original ten to the current (at that time) 33 participating in RUFORUM has on the one hand deepened the importance of RUFORUM as a voice for HAE on the continent while, on the other hand, stretching the programs and services that RUFORUM can provide’. Indeed in response to a Call by the African Union Commission in 2014 for RUFORUM to support the implementation of Priority One of the Science, Technology and Innovation Strategy for Africa (STISA 2024), RUFORUM has expanded its operations Continent wide, but in a phased manner (Fig. 2). In support of this, RUFORUM has signed a Memorandum of Understanding with the African Union to support implementation of STISA Priority One (reducing poverty and ensuring food and nutrition security).

To guide the RUFORUM operations and to align to STISA 2024, RUFORUM in August 2015 launched a five year Strategic Business Plan (2015-2016), with four key thrusts (Fig. 3). The Strategic Business Plan was designed to respond to key current challenges and evolution in Africa’s agricultural and higher education landscape. In addition to an expanded

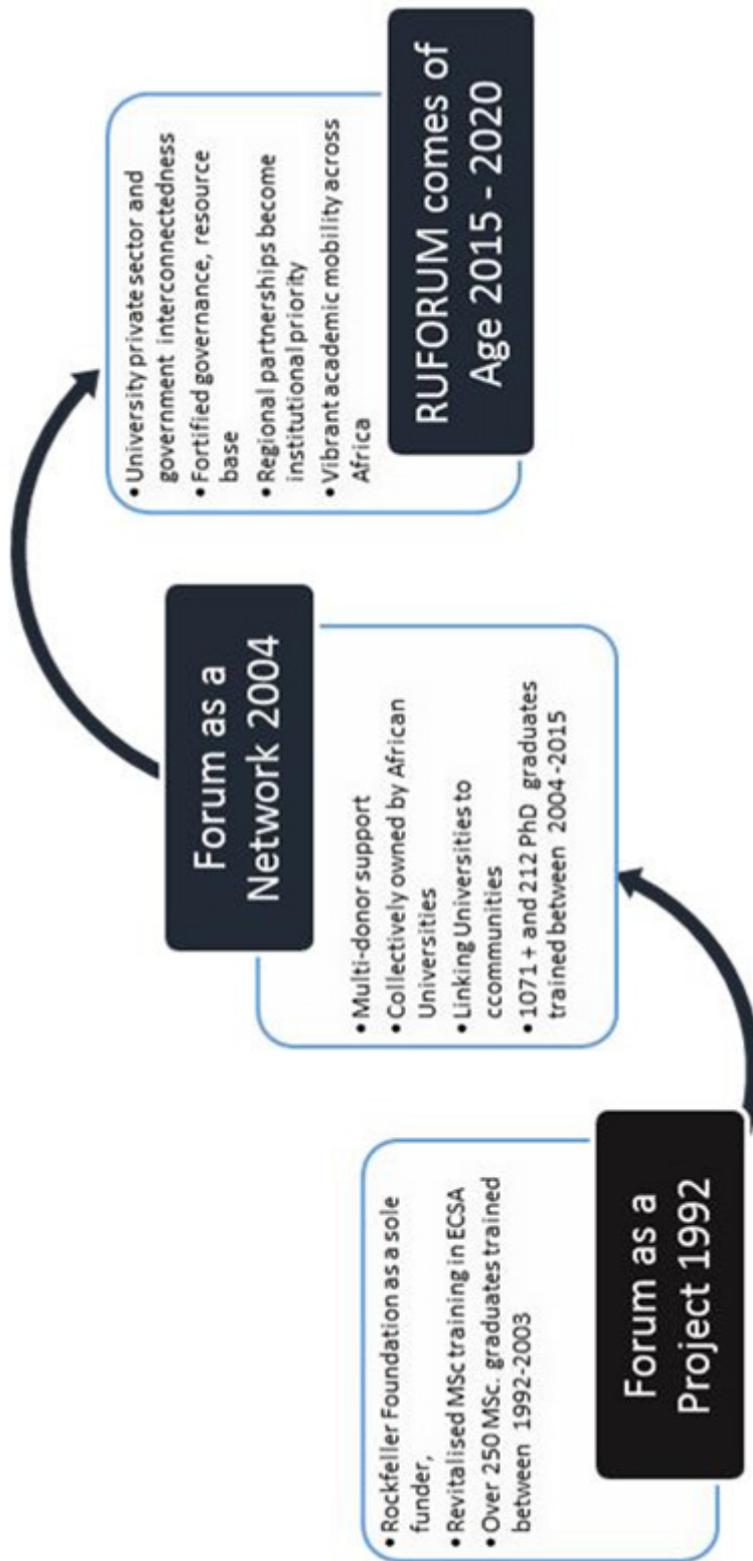


Figure 2. RUFORUM Evolution- Universities better equipped to tackle development



Figure 3. RUFORUM's capacity building framework 2015-2020

Competitive Grants System (CGS) that focuses on supporting commodity value chains, and regional masters and PhD programs, RUFORUM has further extended its work on policy advocacy in Africa bolstered by its enhanced membership and engagement of African Vice Chancellors. RUFORUM's Strategy is implemented through its capacity building framework, as depicted in Figure 2 (Tizikara *et al.*, 2016).

Lessons and implications for the future

As RUFORUM moves forward with a strengthened internal structure and efficient financial and management systems, various challenges remain. Key challenges are described below:

1. There is greater recognition of the importance of the private sector in Africa as a means to broaden resources to support agricultural transformation through harnessing this growing sector. Universities are increasingly challenged, as other institutions, to work with the private sector to support quality enhancement within the higher education sector in Africa, but also to enhance the relevance of their training for employers. RUFORUM seeks to enhance the 'interconnectedness' between governments, who are currently the main funders of higher education in Africa, with the private sector and other actors. This will be the focus of RUFORUM major convenings in the future to support the development and piloting of models to enhance university-private sector linkages.

2. RUFORUM focuses attention in strengthening itself as a platform for support to the university sector. Enhancing ownership by universities as its membership continues to diversify remains a critical challenge. Universities continue to benefit from collaboration and particularly rationalization of existing resources across the network.
3. RUFORUM's growth has also broadened its geographical reach with recent introduction to West and North Africa. As its explosive growth occurs on one hand, the need to harness regional partnerships to support RUFORUM's work, particular where no in-house capacity exists such as in gender is critical. In the area of gender, RUFORUM has worked closely with the African Women in Agricultural Research for Development (AWARD) as a key partner. RUFORUM is also reaching out to other Higher Education networks and platforms, and as an example, works very closely with AGRINATURA, the European Network of Agricultural Universities and Research Institutions. Regional partnerships will improve the scope to enhance quality and impact of RUFORUM's work. It also allows for piloting of spill-overs across its current 25 countries and 60 member universities.
4. The use of academic mobility in Africa to strengthen the higher education sector fits well in RUFORUM's 'modus operandi'. As younger universities join the network, there exists increasing opportunity to enhance cooperation across universities, particularly for staff development programs and to reduce 'inbreeding' while enhancing PhD training at African universities. Even partnerships amongst "strong universities" is essential for infusing new ideas and approaches, and developing teams across Africa. This contributes to enhanced regional integration.
5. As opportunities for employment in the region decrease, and the number of persons entering the job market continues to increase, the need for training job creators and entrepreneurs who are able to make use of the agricultural sector to create value and wealth for local communities will become increasingly important. Scaling of the work to train agri-entrepreneurs currently being undertaken with two public universities (Gulu in Uganda and Egerton in Kenya) will be important for RUFORUM's future. Students will require more opportunities for working in the field directly with farmers, and for experiential based learning;
6. Expanding access to education will require greater use of ICTs for supporting education quality and access in the region.

Conclusions and future perspectives

African agriculture has continued to evolve as highlighted by key changes in population growth, rural urban migration, climate change, and use of ICTs. The need for trained human resources to design and implement agricultural programs in Africa will continue to increase. At the same time, the higher education sector has also significantly evolved with especially expanded enrolment. However, expansion in this sector has also led to new challenges which have been discussed in this paper. RUFORUM has an important role to play in

supporting higher education to better respond to key challenges. RUFORUM plays an important role in the CAADP framework to support the engagement of African universities in CAADP implementation. RUFORUM supports universities, through partnerships, to design, test, pilot and scale best practices in Africa. Growth of the network has also placed the organization in a strategic place to enhance the engagement of policy makers in the higher education sector and enhance understanding of human capacity building issues in Africa for enhancing agricultural and the broader economic development. Further, the STISA 2024 provides the framework for RUFORUM and its member universities to contribute to the Africa Vision 2063 (*The Africa We Want*)

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