



Genesis, evolution and strategic thrusts of RUFORUM

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ABSTRACT

The genesis and evolution of RUFORUM arose out of the recognition by 10 universities in East and southern Africa of the considerable gains to be made by continuing with the formalization of the relationships established out of a donor programme-Forum for Agricultural Resource Husbandry, “the Forum” which had been established by the Rockefeller Foundation in 1992. The new African initiated and led institution was based on adapting “the Forum” strategy of linking university faculty and students with other African institutions as well as with smallholder farmers and other national innovation system actors. The new network would work together to package and market the programme to broaden donor support for intensifying efforts to improve quality and relevance and increase access to post-graduate education within Africa. The purpose of this review is to reflect on the transition processes from “the Forum” to RUFORUM so as to provide key lessons in organizational dynamics as institutions undergo transformation for continued relevance to food security and inclusive and sustainable development. In 1993, “the Forum” provided funding on a competitive basis to 10 universities¹ requiring that post-graduate students work in the field with smallholder farmers and in a more participatory way on issues that were demand-driven. Universities and faculty were supported with research infrastructure and equipment support and funds allowing them to improve supervision and visit students in the field as well as support for all the 10 universities, Deans, student researchers and their lecturers were facilitated to meet annually. At these meetings relationships were strengthened, lessons shared and new approaches to both teaching and research initiated. In 2002, “the Forum” project was closed following a re-orientation of the Rockefeller Foundation. At the request of the 10 universities, Rockefeller Foundation funded discussions on the formation of an African-driven initiative that would continue some of the most successful elements of “the Forum” project. RUFORUM has used this model of networking and engagement across agricultural and educational value chains in linking universities to society and it has been successful in making them more relevant and catalyzing mutual support and collaboration between member universities. RUFORUM was established in 2004 by 10 universities in five countries (Kenya, Malawi, Mozambique, Uganda and Zimbabwe) to foster integration of universities into the national agricultural innovation systems; and provide a platform for training quality graduates and carry out research that supports development processes in Africa. The network builds relationships and allows for mobility and rationalizes resource use and enhances economies of scale and scope. It also provides a platform for networking, resource mobilization and advocacy for agricultural higher education in Africa. By 2020, it has grown to 126 universities in 38 African countries. To

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enable successful operations of RUFORUM, five strategic business plans were developed² continuously guiding the operations of RUFORUM in alignment with the stated mission, mission and niche. An outcome assessment for the period 2004-2018 established that RUFORUM has positively impacted higher agricultural education in Africa; its impact has gone beyond agriculture and it is expanding across Africa. The challenge remains how to decide which ideas should become priorities for action in the face of many demands and requests for membership, orientation and cooperation.

Key words: agricultural value chains, educational value chains, food security, higher education, inclusive and sustainable development, network expansion, smallholder farmers, RUFORUM, strategic business plan, university transformation

RÉSUMÉ

La genèse et l'évolution de RUFORUM sont nées de la reconnaissance par 10 universités d'Afrique orientale et australe des gains considérables à faire en poursuivant la formalisation des relations établies à partir d'un programme de donateurs-Forum for Agricultural Resource Husbandry, «Le Forum» qui avait été créé par la Fondation Rockefeller en 1992. La nouvelle institution initiée et dirigée par l'Afrique était basée sur l'adaptation de la stratégie du «Forum» consistant à relier les professeurs et les étudiants universitaires à d'autres institutions africaines ainsi qu'aux petits exploitants agricoles et autres acteurs du système d'innovation. Le nouveau réseau travaillerait ensemble pour regrouper et commercialiser le programme afin d'élargir le soutien des donateurs à l'intensification des efforts pour améliorer la qualité et la pertinence et accroître l'accès à l'enseignement supérieur en Afrique. Le but de cet examen est de réfléchir sur les processus de transition du «Forum» au RUFORUM afin de fournir des enseignements clés sur la dynamique organisationnelle au fur et à mesure que les institutions se transforment pour continuer d'être pertinentes, pour la sécurité alimentaire et le développement inclusif et durable. En 1993, «Le Forum» a fourni un financement sur une base compétitive à 10 universités pour que les étudiants de troisième cycle travaillent sur le terrain avec les petits agriculteurs et de manière plus participative sur des questions qui étaient dictées par la demande. Les universités et le corps professoral ont été soutenus par une infrastructure de recherche, en équipement et fonds leur permettant d'améliorer la supervision et de rendre visite aux étudiants sur le terrain. Les doyens, les étudiants chercheurs et leurs professeurs ont été invités à se réunir chaque année. Lors de ces réunions, les relations ont été renforcées, les enseignements partagés et de nouvelles approches de l'enseignement et de la recherche lancées. En 2002, le projet «Forum» a été fermé suite à une réorientation de la Fondation Rockefeller. À la demande des 10 universités, la Fondation Rockefeller a financé des discussions sur la formation d'une initiative dirigée par les Africains qui poursuivrait certains des éléments les plus réussis du projet «Forum». RUFORUM a utilisé ce modèle de mise en réseau et d'engagement à travers les chaînes de valeur agricoles et éducatives pour relier les universités à la société et il a réussi à les rendre plus pertinentes et à catalyser le soutien mutuel et la collaboration entre les universités membres. RUFORUM a été créé en 2004 par 10 universités dans cinq pays (Kenya, Malawi, Mozambique, Ouganda et Zimbabwe) pour favoriser l'intégration des universités dans les systèmes nationaux d'innovation agricole; et fournir une plateforme pour la formation de diplômés de qualité et mener des recherches qui soutiennent les processus de développement en Afrique. Le réseau établit des relations et permet la mobilité, rationalise l'utilisation des ressources et améliore les économies d'échelle et de

²SBP 2006-2015; 2006-2010; 2011-2016; 2015-2020 and 2018-2030

portée. Il fournit également une plate-forme de mise en réseau, de mobilisation de ressources et de plaidoyer pour l'enseignement supérieur agricole en Afrique. En 2020, il est passé à 126 universités dans 38 pays africains. Pour permettre la réussite des opérations de RUFORUM, cinq plans stratégiques ont été élaborés en continu pour guider les opérations de RUFORUM en alignement avec la mission, la mission et le créneau énoncés. Une évaluation des résultats pour la période 2004-2018 a établi que RUFORUM a eu un impact positif sur l'enseignement agricole supérieur en Afrique; son impact est allé au-delà de l'agriculture et il s'étend à travers l'Afrique. Le défi reste de savoir comment décider quelles idées devraient devenir des priorités d'action face à de nombreuses demandes et demandes d'adhésion, d'orientation et de coopération.

Mots clés: Chaînes de valeur agricoles, chaînes de valeur éducatives, sécurité alimentaire, enseignement supérieur, développement inclusif et durable, expansion du réseau, petits exploitants agricoles, RUFORUM, plan d'affaires stratégique, transformation universitaire

BACKGROUND

During the 1960s and 1970s, several African nations were on the verge of attaining independence and these periods are branded as the “Years of Africa” and “development decade” (Ajaegbo, 1984). These periods involved establishment of new universities in most of the newly independent African nations due to the increased emphasis of the role of universities in development. During this era, escalation of higher education simultaneously served political and economic desires of the newly independent governments that zealously apportioned resources towards higher education. This role of universities in Africa was re-emphasized at the United Nations Educational, Scientific and Cultural Organization (UNESCO) conference in 1962 (UNECA, 1962) and later at the Association of African Universities (AAU) seminar in 1972. However, in the early years of independence, limited efforts were undertaken by African governments or the universities themselves to promote and actualize this pivotal role, resulting into the negative perception of universities as luxurious and non-essential. This negative perception of universities deepened during the structural adjustment programmes of the 1980s and the political dynamics in Eastern Europe. This resulted into a call for reduced public investment in education in general and a diversion of public investment from higher to

primary education in developing countries in particular (World Bank, 1986). During the same period, public expenditure in the agricultural sector also averaged about half of what was being spent in other continents including Asia, where the Green Revolution was booming.

Attempts by international agricultural research organizations to import the Asian model into Africa were unsuccessful due to the very different and heterogeneous climate and soils and a much more highly dispersed population. Technocrats at the international agricultural research organizations soon realized that African problems called for targeted African solutions. However, there was no assurance that African universities were capable of producing graduates and research capable of providing solutions to the imminent challenges facing the African continent. This was partly attributed to the fact that conventional curricula often mirrored those of American and European universities; ignored the local environments and the reality of small-scale farmers who had no access to inputs, information or markets. Courses, pedagogy and research were highly academic, did not take farmer's priorities into consideration and were inappropriate to local conditions. They were not designed to enable African universities to play a role in national or continental development (Woldegiorgis

and Doeveenspeck, 2013). Universities of the time were operating in 'silos'; cross-faculty collaboration was non-existent; curricula did not approach learning from a holistic viewpoint; and, absence of a holistic institutional reform to enable mass production of practical, field-oriented scholars. Universities were ivory towers and had no clear impacts on social equity, economic growth, or poverty reduction. In the two tempestuous decades between the 1980s and 1990s, higher education in Africa faced a period of severely declining financial resources, financial and governance crises (Mohamedbhai, 2015). This was particularly the case for higher agricultural education and research resulting in limited, and often irrelevant, skilled human resources that led to food insecurity and stagnating agricultural productivity.

Genesis of FORUM

The challenges facing the Africa higher education sector during the 1980s and 1990s resulted into a triple effect of producing low-performing graduates emerging out of a higher education system characterized with limited field and laboratory practical exposure and no research experience. Emigration of research and academic scientists overseas to better paying jobs, resulted into fewer scientists at the national research systems, the majority of whom were above 50 years of age. All this quagmire resulted into national agricultural research organizations supporting a few scientists to undertake post-graduate training overseas to upgrade academic levels since the majority had Bachelor degrees. However, scientists often preferred remaining to work in the countries of study due to better pay and research infrastructure (Fitzgerald and Lindow, 2013). Thus, Africa was at the verge of losing an entire generation of agricultural scientists to brain drain at a moment when scientists were most needed. This was the higher education and agriculture atmosphere at the beginning of the 1990s, when a group of persons with a unifying common interest decided there had to be more post-graduate opportunities

within Africa accompanied by transformation in the way agriculture curriculum is delivered in African Universities to enhance food and nutrition security on the continent. Achieving this required rebuilding the human capital base for the agricultural sector. Core to this thoughtfulness was the Rockefeller Foundation, the humanitarian agency that was fundamental in the development of technologies and social practices that enabled farmers in the third world to increase crop yields dramatically (Perkins, 1990). The Foundation commissioned a review of the agriculture faculties of 10 universities in five southern and eastern African countries to assess the faculties' potential for conducting applied and adaptive research on smallholder food-production systems. The review established obsolete research infrastructure incapable of attracting good students, limited opportunities for practical exposure, limited funding opportunities for students and for attracting good Professors, misalignment between students' research with smallholders' priorities yet Rockefeller Foundation values indigenous knowledge. To solve these predicaments, the Foundation resolved, in 1992 to support the development of quality Masters degree programmes at selected Universities in eastern and southern Africa through establishing the Forum for Agricultural Resource Husbandry ("The Forum") with a start-up investment of US\$ 350,000 (Bharati and Woomer, 2000). "The Forum" was aimed at creating graduates with a practical orientation and strong problem-solving skills to enrich the agriculture sector as trainers, extension workers and programme managers in national research organisations and development agencies. "The Forum" focused on five countries where Rockefeller Foundation had programmes: Kenya, Malawi, Mozambique, Uganda and Zimbabwe.

"The Forum" provided grants on a competitive basis to these universities supporting both faculty and students to carry out research with small-holder farmers from 1993-2003. During

that period “the Forum” had awarded 314 grants worth over US\$ 14.5 million for research and post-graduate training at universities in Kenya, Malawi, Mozambique, Uganda and Zimbabwe with a focus on crop and soil improvement. They also supported the universities with research infrastructure and provided mentoring and support on the implementation of changes in pedagogy and demand-driven research in smallholder farming. In addition, by hosting an annual meeting, they strengthened student and supervisor presentation skills and encouraged the universities to learn from each other and build relationships across the region.

“The Forum” impacts

“The Forum” was instrumental in rehabilitating agriculture faculties, raising teaching standards and improving curricula. The completion rate of Masters degrees was accelerated from up to seven years in the past to an average of 2.7 years (Fitzgerald and Lindow, 2013). This was due to making programmes residential, providing stipends to students and Principal Investigators which reduced their need to supplement incomes by taking on outside consultancies thus encouraging focus on quality, engagement with farmers and early completion. By the time “the Forum” came to an end, most of its Graduates had returned to their jobs at universities or national and international research institutes. University curricula were also improved with institutions venturing into new fields such as biotechnology and biosafety. Universities were working more closely with farmers and other stakeholders. The universities were retaining their staff, expanding their programmes and forging international and regional alliances. “The Forum” had brought training back home to Africa and proved that its approach was a cost-effective and sustainable way of replenishing the continent’s ranks of scientists of international stature. National agricultural research institutions begun to retain and slowly attract good scientists, and by redirecting the thrust of research to smallholders, universities

were active collaborators with national research programmes (Fitzgerald and Lindow, 2013).

Key lessons learned

“The Forum” as an institution strengthened linkages amongst training, research and outreach amongst African Universities. This built the capacity of institutions and individuals native to the continent, an aspect that is important for the development of the African continent. “The Forum” further increased the enrolment rate of students as well as promotion of staff due to enhancement of research infrastructural capacities thus better quality research outputs including employers’ satisfaction with competence and attitudes of “the Forum” graduates (Blackie and Woomer, 2005). Thus, Forum benefitted both staff and students and created a culture of cooperation and collaboration within and outside the universities.

Student selection, supervision and exposure to other stakeholders are important in producing effective graduates for early success in graduate placement (Blackie and Woomer, 2005). “The Forum” was a strong undertaking due to the in-built flexibility and two-way communication with Grantees at regular intervals. It showed the importance of mentoring and supervision, the potential for graduate employment by linking the students with stakeholders and the dynamics of better resourcing lecturers so that they could focus on strengthening research for development and adapting curricula to the local situation. This project was a success but “the Forum” focused heavily on few crops and on soils and was restricted to masters-level students (Fitzgerald and Lindow, 2013). It was important to provide these opportunities more widely across disciplines and also to find ways to address farming systems in curricula, emphasizing multi-disciplinarity and practical experience. Once the Masters programmes were established and starting to graduate strong candidates, there remained the gap of

doctoral training which was still limited within Africa. However, there were uncertainties about the capacity of African universities to produce highly qualified PhD graduates and so in 2004 reliance was still on Ph.D. scholarships opportunities overseas.

“The Forum” was a unique approach using a competitive grants programme to support MSc students to be more relevant and universities to start serving the needs of rural communities. It had the potential for replication and scaling up to other commodities, degree levels and co-operation to strengthen post-graduate training throughout sub-Saharan Africa.

Evolution of FORUM, a donor funded project, to RUFORUM, an African owned and managed organization. In 2002, the Rockefeller Foundation underwent an institutional reform that resulted into reorientation of the agricultural strategy away from “the Forum” objectives of strengthening higher agricultural education (Fitzgerald and Lindow, 2013). The project had been a success and the universities wanted to be able to continue to collaborate and support education and research that served small-scale farmers and society. The Rockefeller Foundation thus commissioned a study and provided support to the universities to develop a new African-owned and led institution. The Deans of the participating faculties of the then 10 member Universities were very keen to transform “the Forum” project into a permanent network, but the Vice-Chancellors had yet to be persuaded. After a visit by the Deans to Eduardo Mondlane University; Kenyatta University; Moi University; Jomo Kenyatta University of Agriculture and Technology; University of Nairobi; University of Malawi; and, Makerere University, the Vice Chancellors agreed to establish a consortium to enable African Universities to work together to source support for projects and programmes that would strengthen universities role in society and provide them with a competitive edge in

sourcing resources. By 2003, the final year of “the Forum” operations, the inauguration of the Regional Universities Forum for Capacity Building in Agriculture, which soon became known by its acronym, RUFORUM had ripened (Fitzgerald and Lindow, 2013).

In January 2004, the 10 Vice Chancellors from the five countries signed a Memorandum of Understanding, and by June 2004, RUFORUM was operational. In August 2005, support for RUFORUM was formalized in an endorsement signed by the New Partnerships for Agricultural Development (NEPAD) and the Ministers for education from each of the then five member countries. That same month a 10-year strategic plan (2006–2015) and a five-year business plan (2006–2010) were approved at the first annual general meeting (AGM). Both documents tailored to national needs, emphasized partnership, networking and practical results. The first governance body to be constituted was the Board of Directors consisting of one Vice-Chancellor from each RUFORUM member country plus three members representing the scientific community and the private sector. The leadership of the Board was to rotate on an annual basis. RUFORUM envisioned that members develop their own goals with the Secretariat coordinating their endeavors and mobilise resources. To facilitate this, a consultative process was undertaken with faculty of the 10 RUFORUM Member universities and established that Universities could not operate in isolation within their countries. This paved the way for the establishment of national forums that served to entrench universities into the innovation systems and to align activities with national poverty-reduction strategies and the agendas of regional bodies. This presented RUFORUM as an umbrella organization for national forums. In order to be fully representative of national development needs, the national forums included scientists from outside academia and stakeholders from the private sector and government agencies.

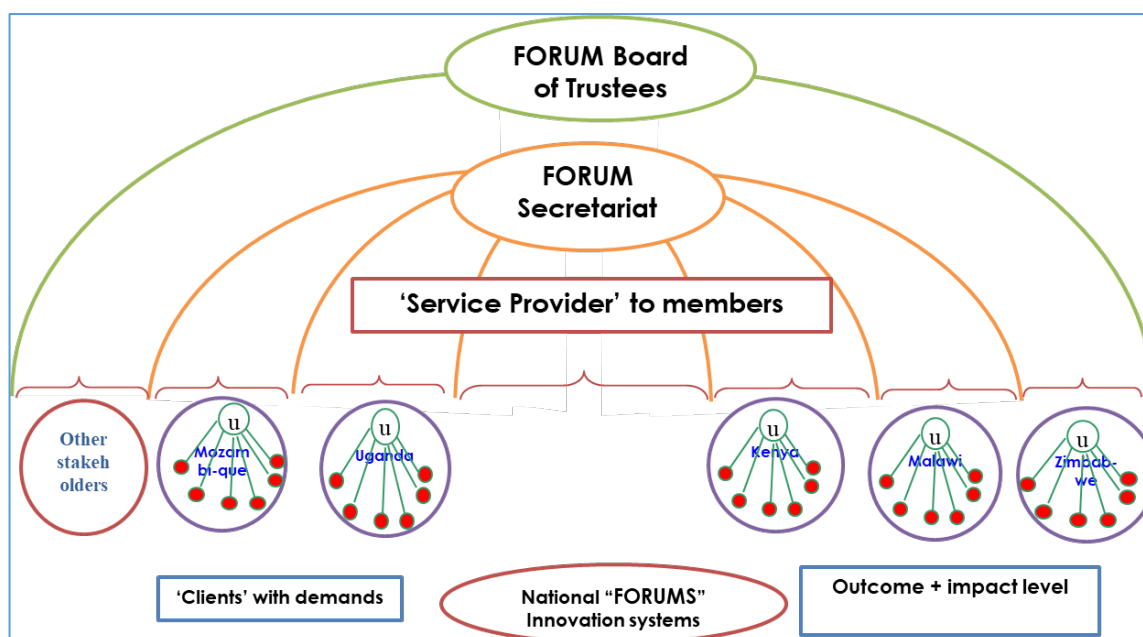


Figure 1. Founding of RUFORUM as an umbrella organization

Using a competitive bidding process open to the 10 founding countries, Uganda won the bid to host the Secretariat of the new organisation and established it at Makerere University as an independent unit.

The First Strategic Plan 2006-2015: Vision, Mission and Strategic Goals. The ten-year RUFORUM Strategic Plan (2006-2015) was developed to designate new thrusts and operational modalities to guide the Secretariat during the transition period from a donor programme to an autonomous member-based organization.

RUFORUM envisioned “*vibrant agricultural innovation systems with fully integrated universities that play a leading role in nurturing the systems through high-performing agricultural science graduates who are innovative and responsive to changing demands*”.

The mission was to foster innovativeness and

the adaptive capacity of universities engaged in agricultural and rural development to develop and sustain high quality in education/training, in innovative and impact-oriented research, and in collaboration.

To achieve the mission and vision above, seven strategic goals were formulated from the challenges universities face and the impact that RUFORUM would like to achieve. The strategic goals determine the orientation and positioning of RUFORUM and detail the organization’s commitment to achieving outputs and impacts via a range of strategies.

RUFORUM invited the Bill and Melinda Gates Foundation to its 1st Biennial Conference in Malawi in 2007 and subsequently engaged closely with them resulting in support for the Secretariat, networking and competitive grants. This opened the path for RUFORUM to expand its operations across the eastern, central and southern Africa regions while consolidating the small grants system.

Strategic Goal 1: Masters and doctoral programmes responsive to stakeholder needs and national/regional development goals

Strategic Goal 2: Shared research and education/training facilities and capacities rationalized for enhanced economies of scope and scale

Strategic Goal 3: Innovative education/training, research and outreach activities supported by adaptive management structures in universities contributing to policy and development practice

Strategic Goal 4: Operational capacity and approaches for innovative, quality and impact oriented agricultural R4D mainstreamed in universities

Strategic Goal 5: Increased participation and voices of women in education/training, research, and production and marketing of knowledge

Strategic Goal 6: Increased use of technology to support effective, decentralized learning and sharing of knowledge

Strategic Goal 7: A dynamic regional platform for policy advocacy, coordination and resource mobilization for improved education/training, research and outreach by universities

In response to a growing need as agricultural research in Africa gained ground and more Masters students' were graduating, it became obvious that it was time to enhance opportunities for doctoral students to be produced within Africa. Those being trained internationally were away from the continent for too long, and in some cases were not returning (Mohamedbhai, 2015). University faculty and national research institutes had very few highly qualified staff. PhD graduates were needed for expanding universities, the increasing importance of African-led research and the recognition that science-led development was essential to improving food security and livelihoods. However, there were no taught PhD programmes in the member countries at that time. As a result there was pressure from members for RUFORUM to strengthen doctoral training at member universities. Resources were very scarce and so it was decided that a regional approach would allow for better sharing of human and physical capital. A process was launched that resulted in the selection of the most critical areas to address on the continent, especially in line with the Comprehensive African Agriculture Development Programme (CAADP) adopted by African Heads of State in Maputo in 2003 and to identify which of the universities was in a position to host each degree programme

(Lynam *et al.*, 2013). These programmes were designed in response to specific capacity gaps within the jurisdiction of agriculture in Eastern, Central and Southern Africa but guided by CAADP and the FAAP (Framework for African Agricultural Productivity). The regional programmes were designed to build the teaching and research capacity of member universities. They were established to address the skills gaps at universities and research institutes and ultimately aimed at improving food and nutrition security and stimulating growth. Having doctoral students carrying out their research on the continent improves access to the knowledge generated and leads to more focus on local problems. Establishing regional programmes supports joint action towards improving the livelihoods of farmers in Africa and pools and rationalizes the use of scarce resources and expertise. Regional programmes train doctoral students in Africa and give them international exposure and build relationships and mobility across the continent. The research benefits surrounding communities and contributes to the African Agenda 2063. The regional programmes also enables mature students to upgrade their qualifications while in-service. They are cost saving - five students are supported for every one student trained abroad (Njeru, 2014). The first three regional

training programmes established triggered institution-wide changes and their success has been credited with initiating a strong drive to establish taught post-doctoral programmes in all disciplines in Kenya and Uganda. Some of these programmes have been very successful and are now internationally recognized and continue to attract students and faculty from across the continent. All are still in place although some may need further nurturing and support to achieve their potential. Additionally, four Regional Masters Programmes were also launched purposely to build capacity in research skills which was grossly limited across universities and National Agricultural Research Systems in Africa, weak and ineffective information and communication capacity, the need to quickly build capacity for middle level plant breeders to service the national research systems, and the need to develop capacity to track and monitor development impact (Table

2).

The general RUFORUM model for the regional training programmes as indicated in Figure 2 below was intended to enhance overall quality of graduate training programmes in the region. The model is based on the centres of leadership which are facilitated or linked through the associated networks of specialisation. This is aimed at ensuring that courses are up to date, and that experience and best practice from throughout the RUFORUM networks are incorporated into graduate learning experiences (Blackie and Woomer, 2005). Accordingly, in 2005, RUFORUM set its vision of success for the Regional PhD training programmes (Figure 3) with a target of training 120 PhD graduates by 2012. A similar framework was set for MSc training with a target of 300 MSc graduates by end of 2012.

Table 2. RUFORUM regional training programmes

Programme	Centre of leadership	Year of launch
PhD programmes		
Dryland Resource Management (DRM)	University of Nairobi	2008
Plant Breeding and Biotechnology (PBB)	Makerere University	2008
Aquaculture and Fisheries Science (AFS)	Lilongwe University of Agriculture and Natural Resources, Malawi	2009
Agricultural and Resource Economics (ARE)	Lilongwe University of Agriculture and Natural Resources, Malawi	2009
Soil and Water Management (SWM)	Sokoine University of Agriculture, Tanzania	2010
Agricultural and Rural Innovations (ARI)	Makerere University	2012
	Egerton University	2012
	Sokoine University of Agriculture, Tanzania	2013
Food Science and Nutrition (FSN)	Jomo Kenyatta University of Agriculture and Technology	2013
Masters programmes		
Plant Breeding and Seed Systems (PBS)	Makerere University	2008
Research Methods (RM)	Jomo Kenyatta University of Agriculture and Technology	2009
Agricultural Information and Communication Management (AICM)	Egerton University	2008
	University of Nairobi	2009
	Haramaya University	2010
MSc Agrometeorology and Natural Risk Management	Haramaya University, Ethiopia	2010
MSc Monitoring and Evaluation	Uganda Martyrs University, Uganda	2012

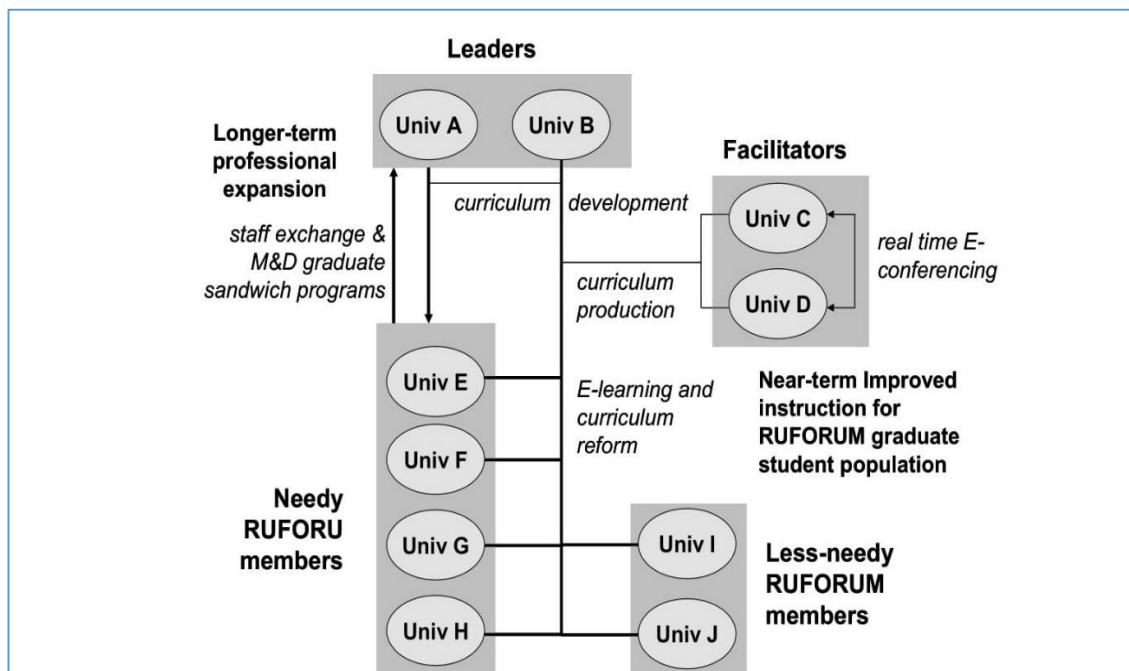


Figure 2. Generalized structure for a RUFORUM Network of Specialization

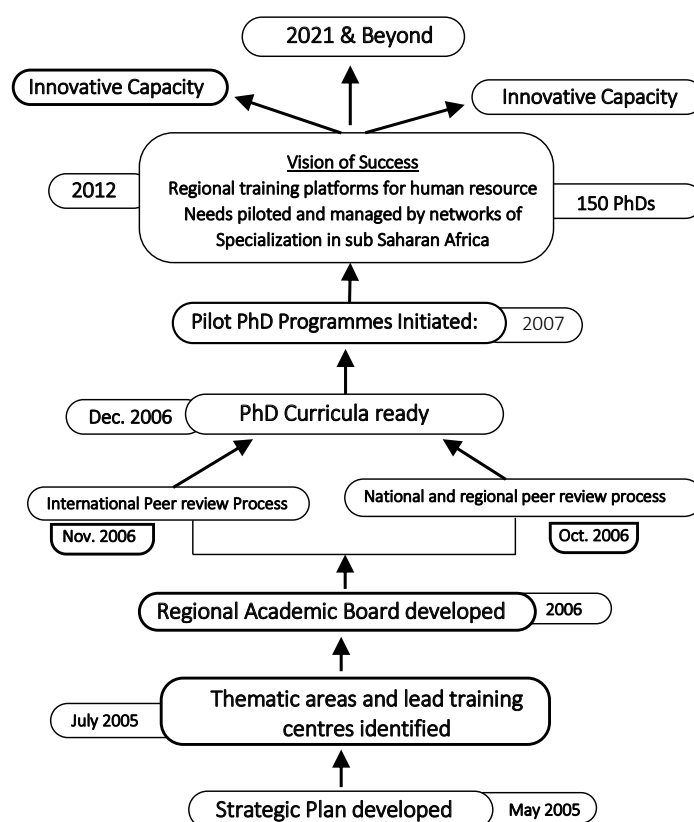


Figure 3. Roamap for the RUFORUM supported PhD programmes

In 2007, during the 3rd RUFORUM Annual General Meeting in Maputo, Mozambique, there was a call for RUFORUM and its universities to engage in policy advocacy; this led to the convening of the Ministerial Conference on Higher Education in Agriculture in Africa (CHEA) in 2010 in Kampala-Uganda. RUFORUM adapted its strategic plan and has become increasingly engaged in a policy advocacy role, taking advantage of its strong convening power and credibility with member universities and countries. In 2016, RUFORUM worked with the Government of Malawi to host a conference on Higher Education in Africa, at the side-lines of the 2016 United Nations General Assembly, purposely to mobilise Inter-Africa and global partnership for higher education in Africa. The Conference was attended by Government leaders in Africa and global representatives from Latin America, North America and Europe. Subsequently, this increased the RUFORUM advocacy role, including engaging with African Heads of State and Government, and together with the African Union Commission and other partners catalysed the formation by the African Union Heads of State of a Committee of Ten Heads of State (C10) championing Education, Science, Technology and Innovation in Africa in 2016 and the holding of the first Extra-Ordinary Summit of the C10, 2-3 November 2018 in Lilongwe, Malawi.

As RUFORUM established itself as a Network of Universities in Africa, with demonstrated impact at country level, demand for membership spiraled. RUFORUM agreed on a phased approach on its expansion strategy, to allow it build footprint in its operating areas while building capacity to manage an expanded network. Thus RUFORUM started slowly expanding to include other universities and in 2005 expanded to Tanzania and Zambia, thus increasing the network coverage to seven countries. By 2011, during the seventh RUFORUM Annual General Meeting in Addis

Ababa, Ethiopia, the demand for RUFORUM membership created the stimulus for RUFORUM to expand its membership even more widely within Eastern, Central and Southern Africa.

To guide RUFORUM future role, a review of RUFORUM by Lynam *et al.* (2013) was undertaken to answer five questions including;

- i. How have RUFORUM programs enhanced both directly and indirectly the capacity of faculties of agriculture in East and Southern Africa?
- ii. What difference has RUFORUM made in enhancing the quality of graduate training in East and Southern Africa and how critical has a regional platform been in achieving this?
- iii. How has the competitive grants program improved the research capacity and outputs within agricultural faculties and are there avenues to improve both relevance and science leadership?
- iv. Is the Secretariat appropriately organized and does it have the capacity to grow and deepen the Higher Agricultural Education platform in the region?
- v. How successful has RUFORUM been in achieving the balanced growth strategy of its business plan and how has it balanced resource mobilization and deepening of its core competencies?

The review established that BMGF core funding allowed RUFORUM to develop and deepen its program structure, which was essential in positioning the regional platform in agricultural policy processes in sub-Saharan Africa. During the course of the grant period, RUFORUM developed its regional MSc and PhD programs, expanded its competitive grants, launched the Community Action Research Programme (CARP) to strengthen linkage between agricultural faculties (universities) and rural communities, developed its M&E system, was

developing its management information system (MIS), and was beginning to position itself in the area of open educational resources and distance learning. RUFORUM had developed several interacting programs that addressed critical needs in higher agricultural education across the region (Lynam *et al.*, 2013). These programs overcame the shortage of PhD academic staff in faculties of agriculture through regional approaches. RUFORUM thus complemented the efforts of regional organizations in agricultural research and agricultural extension including regional seed associations and farmer associations.

In 2014, in recognition of the acute need for upgrading the qualifications of faculty in member universities, a special session of Vice Chancellors met in Kigali, Rwanda and discussed the issue. They determined that one approach would be for the universities to support each other by sending their staff to train in PhD programmes in other Member universities. At the Fourth African Higher Education Week and RUFORUM Biennial Conference, held in Maputo, Mozambique in July 2014 RUFORUM launched the Graduate Teaching Assistantship (GTA) programme. It provided for the host university to waive fees, the sending university to continue providing salary and the staff member upgrading to PhD to assist with teaching at the host university. Mobilising resources for the research and travel would be shared by all parties, supported by the Secretariat where possible. The Biennial conference which included the African Union Commission Chair and government ministers from across Africa resulted in demand for RUFORUM to broaden its focus to include science, technology and innovation (ST&I), and a call to expand membership to West and North Africa. As such, as of 2020, RUFORUM operations cover all the five geographical regions in Africa, with a membership of 126 universities in 38 African countries (Figure 4).

Design of second RUFORUM Strategic

Business Plan (2016-2020) in 2015. The Strategic Business Plan (SBP) for 2015-2020 built on the accomplishments and experience of RUFORUM during the ten-year period (2004- 2014) as a University member-based, regional capacity-building Network. The Plan represented the strategic evolution of RUFORUM development into an established organization ready to serve a wider mandate in relation to the vision of the Africa Union Commission (AUC) for agricultural higher education and its relationship to science, technology and innovation on the continent. It was an adaptable plan that hinged on the overlapping years of the three previous RUFORUM Strategic Plans. It laid out programme choices and financial expectations that would be continuously refreshed in response to changing opportunities and circumstances on the Continent. To support the RUFORUM mission and strategic goals, the objectives of the 2015-2020 Strategic Business Plan were to ensure an effective platform for University support to smallholder farmers by enabling the University community to contribute to the productivity of small-scale producers and the value chains that serve them; to realize economies of scale and scope that link national capacities regionally; to rationalize resource use and promote international standards of excellence; to engage university actors along the whole value chain, including sister organizations and the private sector in mutually beneficial research and training to accelerate delivery of agricultural science-based innovations; to increase participation and voice of women in higher education and activity along the value chain; and to disseminate RUFORUM best practices through building lessons into academic teaching, working with partners in selected countries, including BMGF anchor countries, to spread findings through their networks both geographically and along value chains and, to take on a visionary/advocacy role at the continental level.

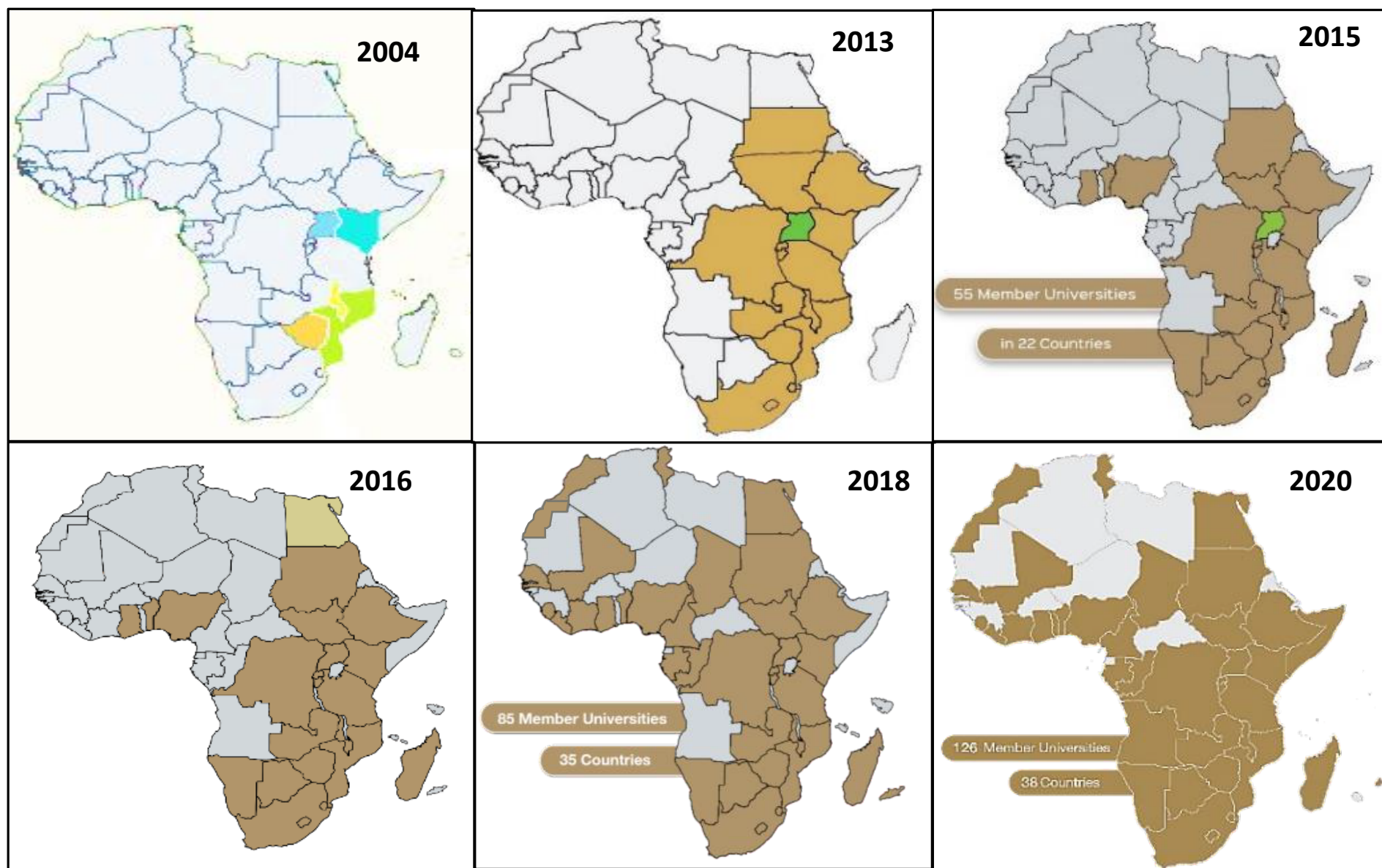


Figure 4. RUFORUM Expansion 2004-2020

Focus and Impact of RUFORUM up to 2017. During the period 2014 to 2017, RUFORUM consolidated its footprints in Eastern, Central and Southern Africa, including targeted support to build capacity for weaker national agricultural research systems (NARS) in Burundi, Rwanda, and Sudan with support through the Forum for Agricultural Research in Africa (FARA) that coordinated the SCARDA (Strengthening Capacity for Agricultural Research and Development) project which focused on building capacities for weaker National Agricultural Research System in Africa. The SCARDA project created high quality masters level study opportunities for African students to undertake demand-led research in more endowed universities in Africa, especially at Makerere in Uganda, Egerton and Nairobi in Kenya and Sokoine in Tanzania. The 28 graduates (15 from Sudan, 5 from Burundi, 8 from Rwanda) from the programme demonstrated that they can respond effectively to the chances and opportunities they are given, including studying in new language (Arabic and French to English). The SCARDA project represented a good case of partners who collaborate in an innovative agricultural and development research capacity strengthening programme in sub-Saharan Africa and opened the door for RUFORUM to expand its operations to the three countries (Burundi, Rwanda and Sudan) and also Botswana, Lesotho, and Swaziland in Southern Africa. Already by early 2013, RUFORUM had met its target of training 120 PhD and 300 Masters level graduates that were immediately absorbed to service agricultural sector and many joined staffing in African Universities and research institutions. The key lesson was that to strengthen research capacity, collaboration is vital as well as creating sustainable relationships among the different research actors, universities, governments and sub-regional bodies.

RUFORUM further strengthened University-Community engagement through the community action research programme (CARP). During the year 2017, three CARP projects operational in Ethiopia, Tanzania and Uganda focusing on wheat, dairy and cassava value chains respectively generated significant technologies, innovations and management practices reaching a total of more than 15,000 farmers in Ethiopia, Tanzania, and Uganda. In Tanzania, a functional dairy innovation platform integrating all actors in the value chain across Tanzania was established, and improved dairy cattle feeding practices were adopted by at least 300 smallholder dairy farmers. In Ethiopia, two new Durum wheat varieties with 14% protein content were released as well as two other high yielding varieties that were biofortified with proteins, Zinc and Iron. In Uganda, the Cassava CARP mobilized farmers and local engineers to fabricate machines for producing high quality cassava flour (HQCF) used to produce confectionaries and composite porridge flours for infants and breast feeding mothers. Cassava varieties suitable for bio-ethanol and industrial starch production were selected and production tested in partnership with Kamtech Logistics Uganda Limited (KLUL). The team produced a beer labeled “Engule” from Cassava in partnership with Uganda Breweries Limited to create more value from Cassava and make it a profitable enterprise from which farmers can benefit from. During the same year, RUFORUM awarded two new CARP+ projects focusing on the pig and potato value chains in Uganda and Kenya, respectively involving a mandatory collaboration with technical, vocational education and training institutions.

Strengthening of the Small Grants Scheme.

This was aimed at supporting training of at least two Masters students by a given project in order to empower institutions of higher agricultural education and learning to train

middle-level graduates while strengthening agricultural research programs with lasting benefits for millions of Africa's most vulnerable people. The RUFORUM competitive grants scheme demonstrated that small grants funds have the potential to efficiently link large donors and local actors and ensure that funds and other support services reach those who need it most and use it most effectively. Since experience showed that these competitive sub-granting mechanisms were indispensable in getting money to the right place and generating maximum impact, RUFORUM has been using the small grants funding to support research in African universities linked to addressing the needs of small holder farmers, strengthening agricultural value chains while using research as a mechanism to generate innovation and build human capacity for African universities and National Agricultural Research and Extension Systems. The Outcome is that over 300 technologies have been developed that are in use across Africa, and the graduates are championing research and training across the continent.

Strengthening Regional training initiative, and supporting transformation to African Higher Education Centres of Excellence.

In 2016, the World Bank availed an IDA credit of US\$140 million to eight Eastern and Southern African countries to set up 24 centres of excellence in universities to strengthen postgraduate training and research. Eleven (11) of these were awarded to eight of the RUFORUM member universities in five countries. Some of these universities host the RUFORUM regional training programmes. For example, the Makerere University Regional Centre for Crop Improvement (MaRCCI) arose out of the PhD in Plant Breeding and Biotechnology and MSc in Plant Breeding and Seed Systems regional training programmes initiated in 2008. The AquaFish Centre of Excellence at Lilongwe University of Agriculture and Natural Resources

(LUANAR) emerged from two regional PhD programmes in Aquaculture and Fisheries Science, and Agricultural and Resource Economics hosted on behalf of RUFORUM member universities at Lilongwe University of Agriculture and Natural Resources. In Kenya, Egerton University which hosted the Agricultural Information and Communication Management, now hosts the Centre of Excellence in Sustainable Agriculture and Agribusiness Management, while the Agrometeorology and Natural Risk Masters Programme now forms the core of the African Center of Excellence for Climate Smart Agriculture and Biodiversity Conservation at Haramaya University. Additionally, the Masters and PhD Programmes in Agroecology at Uganda Martyrs University, transformed to become the ACE in Agroecology and Food Systems. Thus, the regional training programmes formed the basis for the design of the Centers of Excellence to facilitate and promote scaling-up of graduate training in respective fields and strengthen linkages with the private sector in the region while increasing females and youth participation. RUFORUM is exploring this approach to establish Regional Anchor Universities/Regional Training Centres to support transformation of agricultural sector and harnessing advances in Science, Technology and Innovation (ST&I) including in emerging areas of data science and digital technologies.

Focus on regional academic mobility.

RUFORUM commenced facilitating academic mobility in Africa in 2009 to strengthen capacity of African universities to build their own human resource capacities and to train a new generation of African scholars who know Africa better and more widely. The overall aim is to foster inter-university collaboration in the field of higher education, promote inter-cultural and linguistic exchanges and regional cooperation across the continent. All the RUFORUM member universities committed to academic mobility through the network based on capacity gaps

in the agricultural sector mapped in regionally accredited masters and PhD Programmes. By 2016, 521 graduate students and 110 academic and administrative staff exchanges had been supported. Students and staff benefit from exposure to diverse cultures and environments, create research networks through conferences, and are have opportunity working in different parts of the Continent. Member universities now exchange staff to deliver guest lectures and build programmes for building capacity and internationalizing their academic programmes. Success registered is attributable to institutional ownership of the programmes by the Vice Chancellors, subsidized cost of training, regionally recognized curricula and a strong coordination mechanism provided by the RUFORUM Secretariat.

Focus on increasing the pool of women scientists. One of the strategic objectives of RUFORUM is to enhance participation and voices of women in education/training, research, and production and marketing of knowledge. Guidelines for student recruitment, award of grants, and scholarships give special focus on support of female students. At the initiation of RUFORUM in 2004, 20% of the students trained with FORUM support at Masters level were female, while those trained at PhD level were 12%. By 2018, the ratios for both masters and PhD training rose to 45 %.

Intensifying advocacy for higher education in Africa. RUFORUM efforts to engage its member universities and supporters to advocate for higher education in Africa grew its network of advocates, by targeted individuals and organisations in and outside Africa that could help it in its advocacy efforts. Notable partners included Agrinatura (European Network of Universities and Research Centres), Technical Centre for Agriculture and Rural Cooperation (CTA) in Netherlands, Forum for Agricultural Research in Africa (FARA) and individuals

especially David Nielsen of the World Bank, HE Prof Arthur Peter Mutharika, President of Malawi, and Prof Ameenah Gurib-Fakim, the former President of Mauritius. The culmination of this sustained advocacy for higher education was the establishment by the African Union (AU) in 2016 of the Committee of Ten Heads of State and Government championing Education, Science, Technology and Innovation in Africa (AU-C10), and subsequently the convening of the first Summit of the AU-C10 hosted by Government of Malawi at the Bingu International Convention Centre (BICC) in Lilongwe, 2-3 November, 2018. The Summit issued a C10 Declaration and Action Plan³.

RUFORUM has convened over 500 networking events including 16 Annual General Assemblies, six Biennial events over the last 15 years. These events have enabled academia-policy-development interaction, thus providing space for niching shared perspectives and visions for development with the active participation of universities.

Expansion to West Africa. At a convening⁴ in South Africa involving African Union Commission (AUC) and higher education actors from across the continent, RUFORUM declared a move to West Africa. This was part of a phased organizational expansion that built upon the existing shared institutional experience and collective footprint. This paved the way for the development of the new five-year RUFORUM Strategic Business Plan for 2016-2020, which confirmed RUFORUM's role as a voice for higher agricultural education across the continent.

Expanding RUFORUM Resource base-securing Mastercard Foundation funding. The expanded RUFORUM expansion demands for intensified efforts to broaden RUFORUM funding base in Africa and globally. As a result of the various partnership engagements,

³<https://www.ruforum.org/sites/default/files/Reports/RUFORUM%20C10%20Report%20English%20Press.pdf>.

⁴<https://ruforum.wordpress.com/2014/11/27/landmark-move-west-ruforum-becomes-continental-organisation/> 54

RUFORUM in 2016 secured US\$ 27.1 million from the Mastercard Foundation to support transformation of African agricultural universities and their graduates to better respond to developmental challenges through enhanced application of science, technology, business and innovation for rural agricultural transformation. With this funding RUFORUM was now able to 'test new waters'. New programmes were developed that gave special emphasis to training needy but deserving students at Undergraduate and Masters levels, focus on youth skills development and entrepreneurship training, incorporation of TVETs into RUFORUM research and training with the aim to foster linkages between TVETs and universities, and piloting students extension delivery model.

RUFORUM Outcome evaluation, 2004-2018:

In December 2018, RUFORUM commissioned an outcome evaluation to provide evidence about the degree to which RUFORUM has had an effect in "strengthening the capacity of African universities to deliver relevant and impact orientated research and training - producing skilled and proactive graduates, and demand driven research outputs and innovation in response to national, regional and continental agricultural development priorities". The evaluation identified several factors that help explain RUFORUM's success as well as other factors that pose a risk to RUFORUM performance. The outcome evaluation concluded that RUFORUM should consolidate and scale-up various successes including increasing awareness and capacities of national, regional, continental and global stakeholders in higher agricultural education in Africa through successive and successful events organized in various countries, and a strong focus on multi-institution transboundary activities; and, integration of universities with communities through student-centered extension services to meet the demand for knowledge and capacity development at the individual farmer and community levels. It further recommended that

RUFORUM further consolidates its undisputed leadership as the pan-African network of higher education institutions with a passion for agriculture, using research as a powerful training tool while delivering developmental benefits. RUFORUM initiatives including establishment of post-doctoral and field attachment opportunities had been useful in helping young researchers raise their professional profiles and broaden their access to opportunities. RUFORUM through its supported programmes and engagement with member universities should continue to champion demand-driven education emerging work and learning to develop the human skills that matter, focusing on ensuring graduates are job-ready, hireable, and have access to rewarding careers over the course of their lifetime by ensuring career-long alignment between education and the job market. The evaluation recommended that while RUFORUM progresses with the policy process approach was to integrate universities into national and continental policies and strategies, measures need to be devised for RUFORUM to evolve and consolidate itself as an evidenced-based advocacy and knowledge management platform on higher agricultural education in Africa. However this would require significant investment in the RUFORUM knowledge platforms and mechanisms for monitoring.

Due to the aforementioned successes of RUFORUM, membership to the RUFORUM Network has continued to grow exponentially. However, once a connection is made, measures of ensuring a long lasting partnership need to be devised to enable RUFORUM access expertise when need arises. Measures of balancing efforts to bring in new members while staying in touch with those known before also need to be devised. Further, the expansion and diversity of the network stretches the ability of the Secretariat to manage and service the network, and meaningfully engage with the policy agenda at the national level. With diminishing resources, there is a danger of RUFORUM spreading too

thin and leaving an unremarkable footprint in the member universities and countries. The diminishing resources also call for RUFORUM to position itself as a facilitating mechanism for the universities and working with its members to design strategic initiatives attracting a more diverse array of funders, and in particular national governments committing to investing and borrowing to support higher education and research. This will curtail the risk of RUFORUM raising more funds by “doing it on behalf” of participating universities, instead of “doing it with” participating universities.

RUFORUM Vision 2030

The process for defining the Vision 2030 for the RUFORUM Network followed recommendations by the RUFORUM Annual General Meeting (AGM) of 2016 and organizational Business Strategy review of 2017 that demanded RUFORUM to develop a comprehensive and inclusive programme for developing Africa’s Agriculture through implementing innovative and transformative initiatives in the higher education sector. A systematically conducted 12-month consultation process with stakeholders including university faculty, staff and administrators, scientists and researchers, public officers and policy makers, the civic and private sector and community members, resulted in the development of RUFORUM Vision 2030: The African Universities’ Agenda for Agricultural Higher Education, Science, Technology and Innovation (AHESTI) (Waswa *et al.*, 2018).

The vision, ‘*vibrant, transformative universities to catalyse sustainable, inclusive agricultural development to feed and create prosperity for Africa*’ comprises four strategic flagship initiatives and three strategic objectives which are (i) developing quality human resources and capacity required to intensify and increase Africa’s agricultural productivity; (ii) ensuring the products, processes and knowledge developed

through university research reach down to value chain actors in the agri-food system to catalyse transformation; and (iii) marshalling resources and strategically allocating them to enable African universities to transform into viable institutional entities responsive to national aspirations and conditions through intensive knowledge-sharing and collective action. The objectives are to be achieved through four flagship programmes:

TAGDev (Transforming African Agricultural Universities to meaningfully contribute to Africa’s Growth and Development) is aimed at transforming African agricultural universities and their graduates, in order to respond better to developmental challenges through the enhanced application of science, technology, business and innovation for rural agricultural transformation. This is expected to be achieved through attracting and supporting youth into agricultural education to acquire skills for employability and entrepreneurship – as skilled, adaptive and proactive graduates responsive to the labour market needs.

RANCH (Regional Anchor Universities for Agricultural Higher Education) aims at creating African Centres of Excellence and academic leadership with high standards of conduct in a field of agricultural and ST&I education, research, innovation and learning supporting other institutions to use and facilitate application of science for development. This is expected to be achieved through facilitating and escalating setting up networks of linked universities with relevant high-level skills and strengthened integration with research as well as collaboration with professionals from the private sector.

CREATE (Cultivating Research and Teaching Excellence) aims at realigning universities’ research and teaching functions into a more integrated model with a focus on

problem solving and enhancing the capacity of the entire university academic practice and outreach system to contribute to inclusive sustainable development. This is expected to result into universities achieving impacts at multiple scales and shaping higher agricultural education management and delivery in positive ways.

K-Hub (Knowledge Hub for Networking, Partnerships and Advocacy) builds on RUFORUM's convening power and facilitates the creation, capture, organising, sharing and refining of information and content across teams and geographic locations – thus increasing access to the latest, up-to-the-minute, evidence-based information and knowledge. This flagship is expected to result into RUFORUM member institutions and affiliates collaborating, using up to date information to making substantial structural changes in the way higher agricultural education and ST&I training are organized and operated.

Progress to-date

Following the development of the RUFORUM Vision 2030, a five-year Operational Plan for the period 2018-2022 was adopted. It had a new Secretariat structure following a functional analysis that was aimed at aligning Secretariat functions to the Vision 2030 aspirations. The financial Year 2018/2019 marked the first year of implementing the five-year Operational Plan.

Since the launch of the Operational Plan there is evidence which indicates that the capacity of universities and Business, Technical and Vocational Education and Training (BTNET) institutions to develop, deliver and scale innovative training curricula and new models of agricultural education has been strengthened through revising curricular of selected academic programmes⁵ at Gulu and Egerton Universities as well as BTNET institutions. There has also been an increased focus on universities attracting promising students from very remote

or disadvantaged groups. These students have received mentoring and remedial and language support. The success has been remarkable with 33 % timely graduation for cohort 1 Masters Students supported by the Mastercard Foundation at Gulu University. Further, there has been an increased focus on much more practical training and on entrepreneurship, for instance, student agribusiness outreach has linked refugees and their host communities to universities (University World News, 2019) and 19% of incubates under the RUFORUM Entrepreneurship Challenge Programme have established own enterprises.

As part of facilitating universities and BTNET institutions to work together to attract, recruit, train and skill Africa's new age of development practitioners and cadres and to help speed up research-into-use, RUFORUM has facilitated relationship of universities with BTNET institutes thus strengthening a broad stakeholder intervention for the smallholder farmers and brokering stronger relationships along the education value chain. Through piloting the Technical Skills Development Program (TESDEP) and the out of school youth programme with the BTNET institutions, RUFORUM has responded to the skills gap and needs of smallholder farmers and in particular, the youth that seek to improve their livelihoods through entrepreneurial agriculture. This has increased RUFORUM's participation in the training of BTNET students in Benin, Botswana, Ghana, Kenya, Namibia, South Africa, Uganda and Zimbabwe. The emerging evidence indicate that Youth are now prioritizing horticultural crops that have a short-term growing period and are profitable in particular to feed the growing urban market. Through the training of refugees (farmers and students), training of BTNET students and training of smallholder farmers, TAGDev supported students are serving as change agents in various communities in Uganda and Kenya. Universities and BTNET institutions have thus demonstrated increased

⁵at Gulu University, Master of Science in Food Security and Community Nutrition at Gulu University, Field Attachment Curriculum at Egerton University, and non-formal Competence based curricular in indigenous micro-organisms and artificial insemination technology at Northern Uganda Youth Development Centre as well as pig production level 3 and 4 competency based curriculum at Baraka Agricultural College in Kenya.

commitment and community engagement to transform rural agricultural communities. This gives universities more practical exposure and the opportunity to speed up research into use. For the BTVET's it provides opportunities for curriculum development and support in training staff and students. In some cases it can also result in the Universities sourcing products from the BTVET (such as in Namibia).

With support from various development partners including DAAD, Carnegie Corporation of New York, United Kingdom Research and Innovation Fund, and Mastercard Foundation, RUFORUM has escalated doctoral training on the African continent. Additional support has been through the RUFORUM Graduate Teaching Assistantship (GTA) program aimed at addressing staff capacity challenges in African universities. The GTA programme is funded by RUFORUM member Universities as part of staff capacity development within Africa for Africa (see Adidja *et al.*, 2019).

RUFORUM has continued implementing recommendations from various policy convenings to increase the pool of women scientists in African Universities and other research and development institutions. New fellowships and research grants initiatives have adopted the 50% opportunity for female applicants. This is the initial step towards capturing the female unique attributes in research and higher education. Efforts are also ongoing to mobilise resources to increase the pool of doctoral trained academic staff in African universities and research institutions, paying particular attention to increasing the pool of women scientists and training for fragile States.

Under the K-Hub, RUFORUM online platforms including the Online Impact Portal and database, higher agricultural education capacity indicators (HAECI) portal, Management Information

System (MIS), knowledge repository, website and blog, and digital communication and social media platforms have proved to be a strong outreach tool not only on the African Continent and the member universities but for different stakeholders across the globe. As part of supporting decision-making processes in the various institutions as well as for informing development partners of the status of higher education by university, 40 institutional fact sheets were generated on capacities in respective agricultural higher education institutions in Africa.

Emerging issues

- i. Growth projection:** Based on the past growth rate of the Network, it is projected that by 2024, RUFORUM membership will increase by 101 universities keeping all things constant. This expansion has implication for niche, possibility of disbursing efforts without solid foot prints and management and financial implications (see follow up section below)
- ii. Network Management Considerations:** With the current and projected increases, there is a need to consider the following for the effective management of the Network:
 - a. Maintaining the original niches of RUFORUM as a network for capacity building in agriculture while embracing ST&I and other non-agricultural thematic areas as supporting fields
 - b. Systematic maintenance of admissions into the network without causing hefty financial pressure
 - c. Innovative ways of financing Network operations to appropriately respond without reducing the Network's ethos and vibrancy
 - d. Ensuring the satisfaction index for the existing members of different clusters
 - e. Develop further guidance on how to encourage members to make their annual subscriptions and corresponding punitive actions for non-compliance

- iii. **RUFORUM's Niches:** The growth of the Network membership to 126 universities across the continent has also come with it diverse expectations that impinge into RUFORUM core niche.

Futher reflection on evolution of RUFORUM and its continental expansion, impact and emerging challenges. The establishment of RUFORUM, and its continuous progressive growth in membership from 10 universities in five countries to 126 universities in 38 countries (Fig. 2), was (and still is) an expression of collective goals and shared needs, as documented in the various decisions of the Annual General Meeting and governance organs. Establishing a network of like-minded. Institutions is catalytic for development. But once a connection is made, measures need to be devised to continue to build the relationships. For the Secretariat it is important to maintain the collaboration functional. There is the need to balance efforts to engage new members while continuing to serve existing members. This is made more complex by the diversity of institutional capacities, cultures and policy environments. The member universities and the countries to which they belong and/or operate from are at different development levels, with differentiated capacities and needs - financial, human capital, infrastructure, scientific and technological.

RUFORUM has proved to be a functional networking system that is built on strong trans-institutional and transnational collaborative approaches that utilize Africa's diversity, range of existing capacities and expertise, while leveraging international cooperation. Nonetheless, the expansion and diversity stretches the ability of the Secretariat to manage and service the network and meaningfully engage with the policy agenda at the national level. RUFORUM is renowned for the noticeable impact it has made and has strong ownership as is evidence both in the attendance level of

its Annual General Meetings, that attract on average over 400 university representatives and other actors from across Africa and globally, and of the collaborative teaching, training, research, advocacy and resource mobilization efforts of members. With diminishing resources, there is a danger of RUFORUM spreading too thin and leaving an unremarkable footprint in the member universities and countries. RUFORUM expansion is a success that needs to be carefully managed so as not to become a risk. As a pan-African network, RUFORUM has to continue to add new members to the network in order to share learning across the continent and access as many resources (expertise and facilities) as possible. It also needs to maintain the character of the network and the continued interest of existing members by facilitating collaboration, staying in touch and activating the appropriate expertise when the network has work that needs to be done. It is increasingly difficult to raise resources to cover the networking, governance and administrative costs. Members, countries and the continent need to work towards taking full responsibility for the costs of operating the Secretariat. The RUFORUM Charter is a step in this direction.

RUFORUM coming of age

The RUFORUM Vision 2030 is to engender a financially stable network by 2030. The network is expected to have significant financial and other resource input from the member universities, African governments, and regional and international agencies. Strong commitment from all stakeholders will ensure the attainment of RUFORUM Vision 2030. This is a key underpinning issue that the Network and its Board of Trustees must periodically reflect on and come up with strategies to sustain RUFORUM operations.

CONCLUSION

RUFORUM has continued to espouse the core values pursued under "the Forum" and has built

on the approaches used to strengthen the quality and relevance of universities. RUFORUM still uses competitive grants, supports students working with small farmers, communities and rural entrepreneurs in participatory action research. It has expanded the concept of linking students to all stakeholders and supports multidisciplinary, multi-agency collaborative research platforms that inform university curricula and assist in the uptake of innovations and the role of universities in society. This has ensured that the knowledge, skills and techniques emerging from universities are available more broadly to mutually benefit the network and the public. Participatory research has increased adoption rates of new methods or technologies by farmers and communities involved in the design and execution of the research programmes. It has strengthened more interdisciplinary, practical and student-centred learning and encouraged entrepreneurship, thus building competencies of agricultural graduates for the labour market landscape.

RUFORUM has also helped universities to develop regional doctoral and masters programmes and has facilitated scholarships and fellowships. Apart from much lower costs of training through fellowships and scholarships compared to international study, training in the African continent and through their research during their training, students find solutions that are applicable in the local context and thus contribute to improving livelihoods of rural communities. In this process RUFORUM has piloted systems to recruit and mentor students from very remote and disadvantaged backgrounds resulting into extending higher education to the most vulnerable populations of the African Continent. It has facilitated staff and student mobility across the continent and strengthened the mutual self-help that resulted in members waiving fees for PhD training of member university faculty through the Graduate Teaching Assistantship Programme.

This has greatly contributed to rebuilding of staff numbers, skills and competencies for teaching and research at member universities; strengthening national agricultural research institutes, government ministries, departments and agencies, and non-State actors.

RUFORUM continues to emphasize building a strongly connected network with regular engagement of the 126 Vice-chancellors and over 200 Principals and Deans with lecturers and students of Agriculture and related sciences. This has enabled academia-policy-development interaction thus offering space for niching shared perspectives and visions for development with the active participation of universities. It has thus provided young faculty and students with opportunities to present their findings and develop stronger inter-personal skills and commitment to serve. This also strengthens advocacy for greater recognition of the role of universities in development and of the importance of investing in them.

RUFORUM also has a range of successful and active on-line sharing platforms that have broadened cooperation opportunities available to both faculty and students. Vast information can be accessed, transmitted and discussed at the same time using the various online portals of RUFORUM allowing for meaningful sharing of lessons, and research in new trends. RUFORUM actively encourages collaboration between members who support each other, share resources and work together to raise resources and respond to international funding calls. All the members value the role that RUFORUM plays in strengthening their links with stakeholders nationally, regionally and internationally and there is pressure from universities wanting to become members.

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