

Research Application Summary

Pushing the frontier of Africa's agricultural universities to contribute to Africa's growth and development

Adipala, E.* & Egeru, A.

Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), P.O. Box 16811,
Wandegeya, Kampala, Uganda

***Corresponding author:** e.adipala@ruforum.org

Abstract

Critical to Africa's growth and development is how universities push forward with their contribution in generating and applying requisite knowledge and innovations that are applicable and address the burgeoning challenges faced by communities and industry on the continent. This article shares the experiences of the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) in working with the agricultural universities in Africa to push the contribution of universities to support the continents' growth and development through a range of interventions including: i) piloting a new type of agricultural education including the use of student-centered outreach model and Community Action Research Programmes (CARPs), ii) strengthening agribusiness and entrepreneurship training in universities, and iii) integration and working with TVETs/ATVETs. It is evident that innovativeness is required from within and among universities particularly in line with the actions, programmes and interventions they undertake. This is because the operational ecosystem is complex with diverse stakeholders, interventions, demands and rapidly evolving interests and needs of the industry and communities owing to transformations in agricultural sector that are taking place. Further, a commitment at the high-level institutional apex management is a requisite if success is to be attained in how universities engage to influence growth and development processes. In particular, the integration of the TVET/ATVET to work with universities is dependent on how Universities/TVET/ATVET managements appreciate the underlying value and principles of cooperation. Continued exploration involving multi-stakeholder and systems integrated perspectives are encouraged to allow for a forward and backward development and implementation of interventions that seek to enhance the contribution of universities to Africa's growth and development.

Key words: ATVET/TVET, ecosystem, innovation, TAGDev, Africa

Résumé

La façon dont les universités montrent leur contribution à la création et l'application des connaissances et innovations requises pour répondre aux défis des communautés et des industries sur le continent est cruciale pour la croissance et le développement de l'Afrique. Dans cet article, il est question des expériences de collaboration du Forum régional des

Universités pour le renforcement des capacités en agriculture (RUFORUM) avec les universités agricoles en Afrique pour mieux les amener à contribuer et à soutenir la croissance et le développement des continents à travers une gamme d'interventions comprenant: i) le pilotage d'un nouveau système d'éducation en agriculture comprenant l'utilisation d'un modèle de sensibilisation centré sur les étudiants et des programmes de recherche d'action communautaire ; ii) le renforcement de l'agro-industrie et de l'entrepreneuriat dans les universités, et iii) l'intégration et la collaboration avec les EFTPs. L'innovation est nécessaire au sein et entre les universités en particulier selon les actions, programmes et interventions qu'elles entreprennent. En effet, le système opérationnel est complexe avec une diversité de bénéficiaires, d'interventions, de demandes et d'intérêts et besoins de l'industrie et des communautés en évolution rapide, en raison des transformations qui se produisent au sein du secteur agricole. Par ailleurs, l'engagement à un niveau institutionnel élevé est une nécessité pour faire réussir la procédure avec laquelle les universités s'engagent à influencer les processus de croissance et de développement. Plus particulièrement, l'intégration de l'EFTP pour une collaboration avec les universités dépend de la façon dont les leaders des deux types d'institution apprécient la valeur et les principes qui sous-tendent la coopération. Les actions continues intégrant les perspectives multipartites sont encouragées pour permettre le développement et la mise en œuvre en amont et en aval des interventions visant à améliorer la contribution des universités à la croissance et au développement de l'Afrique.

Mots-clés: EFTP, écosystème, innovation, TAGDev, Afrique

Introduction

Africa's growth and development is writ with trajectories defining a continent in the positive move amidst burgeoning constraints. Despite a declining growth pattern in the past decade, the continent maintained two critical growth achievements; firstly it, it withstood the downturn of the global financial crisis of 2007-2009 with a moderate growth trend; and secondly, its growth pattern remained stronger than that of the 'lost decades' of the 1970s and mid-1990s (Hirsch, 2017). These positive patterns are projected continue into the foreseeable future. For example, the continent is on a recovery growth trajectory with the Gross Domestic Product (GDP) expected to expand by 3.2 percent in 2017 and 3.8 percent in 2018, up from 1.7 percent in 2016 (Confidente, 2017). The continent is also experiencing an increase in Total Factor Productivity (TFP) compared to the 1980s (Rodrik, 2016; see Figure 1: a rapidly rising middle class projected to reach 1.1 billion people by 2060 (AfDB, 2014); and an accelerating rural diversification (OECD-FAO, 2016).

The observed growth in Africa is replete with diverse drivers including: a rapidly rising private sector (AfDB, 2014); entrepreneurial spirit and vast natural resources (AfDB, 2017); a surge of investment in infrastructure, regional integration, human capital mobility across the continent and development of a regional payments system providing for ease of cross-

border banking (Hirsch, 2017). Further, agriculture has remained a key driver of Africa's accelerating growth particularly for the economies in sub-Saharan Africa. The foresight around Africa's agriculture is compelling; 60% of all jobs on the continent are connected to agriculture and in the next two decades, agriculture will continue to contribute the bulk of jobs (Jayne and Traub, 2016); the continent's food and beverage markets are buoyant and are expected to reach US\$1 trillion in value by 2030 (Diop, 2016); and emerging medium scale-scale producers with 10-30% of the total agricultural land now under the control of urban households who are making a shift to agricultural production (OCED-FAO, 2016). Sustained growth requires focused and deliberate actions including fiscal discipline, productivity improvements, infrastructure improvements, increased regional trade, and greater focus on stimulating and supporting innovation (Mayaki, 2016).

However, the growth patterns in Africa are incomplete with substantial investment in human capital development. Education and skills for example provide stronger capacities to diversify financing and more effective efforts to promote structural transformation (AfDB, 2017; Dogbevi, 2017); and makes it possible to exploit productivity drivers of the green revolution (Moyo *et al.*, 2015). African agricultural universities ought to be at the forefront of providing relevant education and skills, technology development and advance innovations and interventions that address three critical constraints that are predominant in smallholder agriculture in sub-Saharan Africa, these being resilience, scale, and market incentives (Warshauer, 2016). Consequently, the emphasis on education and skills through strategic investment in capacity development has been emphasised during the post-Malabo CAADP Road Map and Strategy with capacity development being considered a key investment priority in Africa's agricultural transformation. Indeed, investment in capacity development in the continent is being undertaken by a host of agencies (e.g. AICAD, ANAFE, AWARD, CTA, FAO FARA, IITA, RUFORUM, and the CGIAR) in

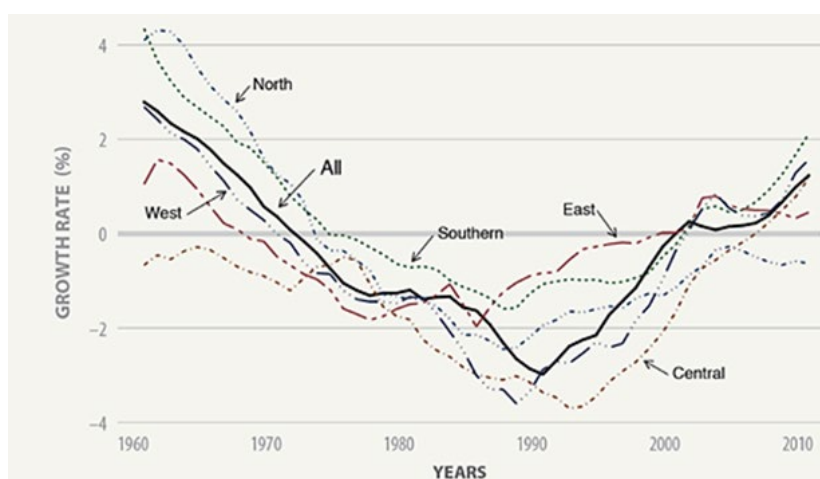


Figure 1. Growth performance of country groups since 1980

partnership with agricultural universities on the continent. Common to all these agencies, their approach to capacity development for agricultural transformation reflect a shift from shift from linear to an innovation systems perspective (AGRA, 2016). These agencies are influencing the frontiers of agricultural transformation and its contribution to Africa's growth and development by pushing the frontiers through education, research, outreach and innovation. This article shares RUFORUM's experience in pushing the frontier of Africa's agricultural universities to contribute to Africa's growth and development through delivery of innovative agricultural training, engagement with farming communities, entrepreneurship and collaboration, south-south learning, collaborations and partnerships.

RUFORUM network and frontier interventions

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), a network of 66 universities in 26 African countries has grown over the years from a project funded by the Rockefeller Foundation (1992-2003) to an established institution in 2004 with phenomenal continental outlook (Figure 2) expanding both in scope and business orientation (AGRA, 2016). In the last 13 years, RUFORUM has been focused on getting agricultural universities within the network to demonstrate their contribution to national development. At the same time, through flagship programmes, RUFORUM has been focused on delivering innovative training in partnership with member universities. The Transforming African Agricultural Universities to meaningfully contribute to Africa's growth and development (TAGDev) is one of the flagship programmes that RUFORUM is implementing across the continent. The programme seeks to transform 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.

The TAGDev intervention represents a frontier programme with four levers; i) piloting a new model of agricultural education at early adopter universities that connects tertiary agricultural education to rural communities, with an emphasis on smallholder farmers; ii) strengthening agribusiness/entrepreneurship at two universities and selected TVET institutions; iii) scaling the new model for agricultural education to other agricultural universities and TVET institutions; and, iv) increasing collaboration and mutual learning among institutions and agencies implementing and influencing innovative Tertiary Agricultural Education for rural transformation in Africa. The TAGDev programme is conceptualised from the understanding of social innovation as critical to the transformation agenda of Africa's agricultural communities (Figure 3). A social innovation is any action that is new, that meets a social need, that engages and mobilises its beneficiaries, and that, to some extent, transforms social relations by improving beneficiaries' access to power and resources (The Economist, 2016). Thus, TAGDev programme responds to four challenges facing agricultural development in Africa, i) how to transform smallholder agriculture through the use of largely available knowledge and technologies; ii) how to engage under-utilized potential of universities to contribute to agricultural development through the

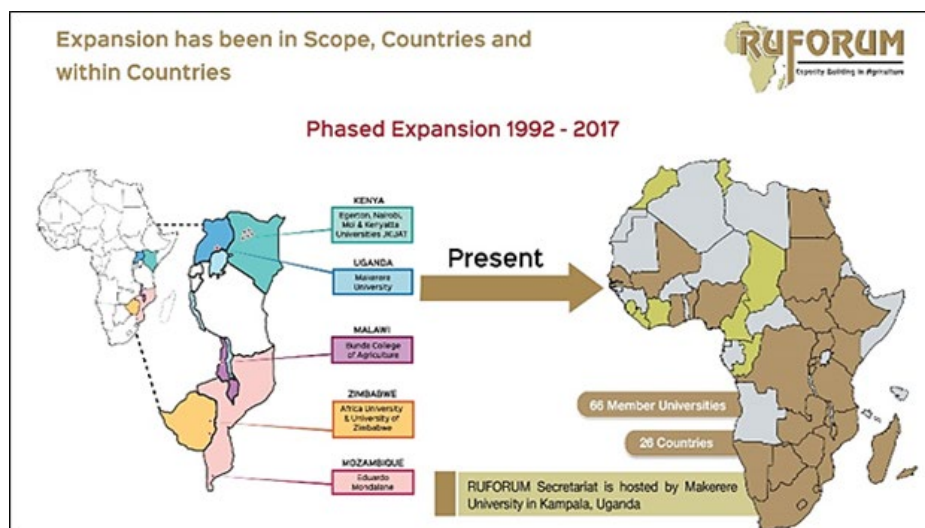


Figure 2. RUFORUM's expansion in scope, countries and within countries

training of quality, entrepreneurial graduates; iii) how to harness the immense potential of youth within Africa-translating potential to something meaningful; and iv) how higher education can strengthen the education pipeline-primary, secondary, TVET and university in Africa. Through TAGDev intervention, African agricultural universities are in the direction to produce graduates with the requisite 21st century skills, that are not only required by the employers of today but are also relevant to Africa's agricultural transformation and economic growth and development; and creation of inclusive and sustainable societies (Results for Development Institute, 2013; Robinson-Pant, 2016). The TAGDev programme explores training models that increase university-community engagement to facilitate knowledge transfer and enhance innovation so that skills development contributes to poverty alleviation and at the same enhances educational integration. In the subsequent sections, the design, experience and lessons from implementing the TAGDev are shared to provide evidence of pushing the frontiers of agricultural universities to contribute to Africa's growth and development.

Piloting a new model of agricultural education connecting tertiary agricultural education to rural communities. Africa's agriculture is replete with how agricultural universities in Africa have remained operational silos and ivory towers detached from the communities they are meant to serve but make use of the communities to extract information relevant to the pursuit of academic processes from time to time (Juma, 2012; Egeru *et al.*, 2015; Kalule *et al.*, 2016). Consequently, community fatigue with recurrent research without transformation in household and/or community livelihoods led to some sort of apathy. It was thus vital that a rethink into how universities and communities engage was undertaken to attain win-win interactions with universities playing a greater role in community and agricultural transformation. A social innovation action approach to community

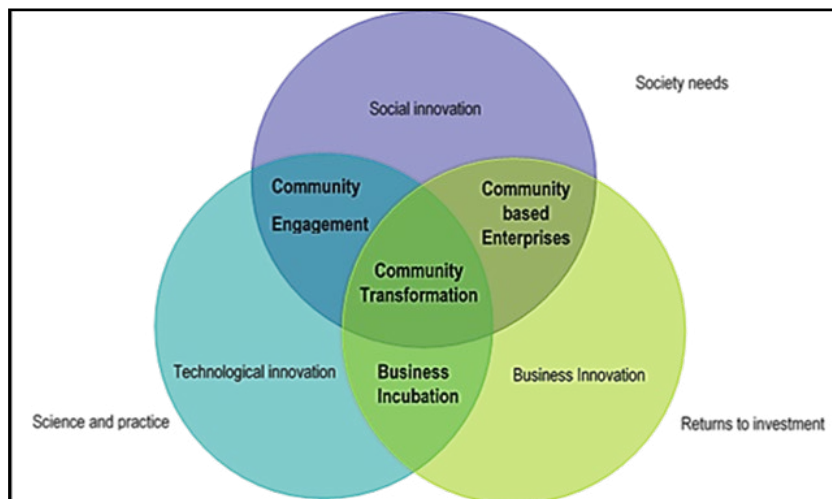


Figure 3. Conceptualised model of agricultural education based on social innovation

transformation and interaction was visualised through the TAGDev program allowing for implementation of community engagement (Figure 4) and the student-centered outreach model (Figure 5). The community engagement and student-centered outreach model as implemented under the TAGDev programme build on from the experiences undertaken at Gulu University in Uganda and Egerton University in Kenya. Further, the design of these models was influenced by the interactions and support from EARTH University, Costa Rica, an adaptation of the effective and engaging approach of universities working with rural communities in the transformation process. Another critical addition in this process was the inclusion of the Community Action Research Programme PLUS (CARP+) as an innovative approach that strengthens knowledge co-design, co-creation, co-production and utilization. The CARP+ also embodies an aspect of enhancing educational integration through the incorporation of the Technical and Vocational Education and Training (TVET) as part of community action research programmes implementers. This strategic inclusion is aimed to increase the practical orientation of training of students from the agricultural universities, increase partnership and collaboration with TVET institutions that are well known for their hands on practice and increase the relevance of research in addressing local challenges among smallholder farmers.

From pilot to scaling out these new models of agricultural education, three key lessons emerge. Firstly, communities are willing to engage with universities and are supportive of these engagements as long as they visualize the net benefits to their institutions or families are emerging. Communities engaging with Gulu University (Uganda) such as Paicho Farmers' Cooperative have reached a level placing requests for students, hosting them and providing some basic transport facilitation during the period when the university is in recess. Secondly, community engagement requires clear institutional buy-in to allow

for clear programming in terms of staff time, curriculum orientation, financial resources and other institutional resources as well as engagement with other stakeholders. As such, it requires a deliberate commitment on the part of the university administration towards facilitated engagement. Thirdly, constant innovativeness among the university faculty in the face heightened competition from other development actors who often have inducements to attract farmer participation. Such innovativeness is required to reduce farmer fatigue given new students received by the farmers on a yearly basis, and costs of funding to support outreach implementation.



Figure 4. Community engagement framework

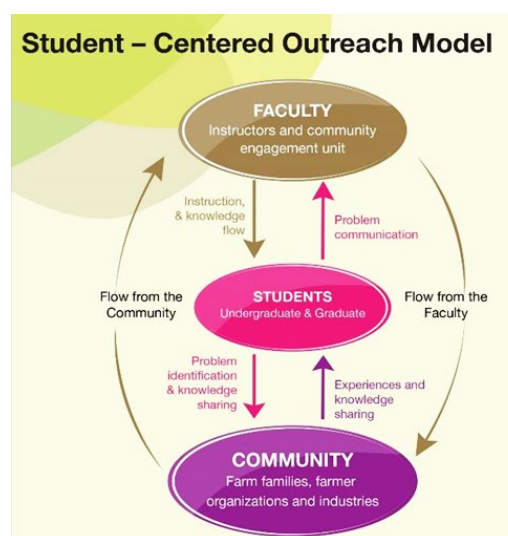


Figure 5. Student centered outreach model

Strengthening agribusiness/entrepreneurship in agricultural universities

Agribusiness and entrepreneurship are fronted as intentional development efforts that have potential to transform the agricultural sector in Africa by facilitating inclusive growth and development on the continent. They are visualised from this perspective owing to their potential to provide a range of opportunities to a range of persons participating in diverse agricultural commodity value chains. With Africa's agricultural output, food and beverage markets poised to reach US\$1 trillion by 2030 (Diop, 2016), it is only logical that agribusiness and entrepreneurship become central in the training processes of universities as well as African universities innovating to lead agribusiness and entrepreneurship development. Gulu University (Uganda) and Egerton University (Kenya) with support from RUFORUM piloted that Student Enterprise Scheme (SES), an agribusiness innovation model (Figure 6) aimed at inculcating the principles of enterprise development from theory to practice. The students have the opportunity to develop business plans that are evaluated for quality and business risks; the competitive business plans are funded through a student agribusiness innovation loan to execute the business idea. Students work through a team of at least five members assigned different roles such as production, sales and marketing, branding and promotion managers.

Through this intervention, two key lessons are emerging: i) agri-business and entrepreneurship practical oriented training provides a good learning experience to students. However, it requires time commitment from staff who often may be stretched with other responsibilities. Thus, successful implementation of a highly practical entrepreneurship training model requires a full time commitment of staff and cannot be relegated as a part time activity within the academic curricular; ii) experience among staff is a requisite in making a successful agribusiness and entrepreneurship training, particularly where the students projects become complex as the number grows. In this regard, it becomes imperative to take deliberate institutional arrangement and organisation to for example have a coordinating office/department with a focal person in-charge entrepreneurship projects for vibrancy to be realised. Learning from these experiences, an integrated approach to the advancement of entrepreneurship through the establishment of agribusiness incubation hubs at Gulu University, Egerton University and other RUFORUM network universities is underway to provide for a focused attention on strengthening entrepreneurship and agribusiness development in African universities.

Integration and working with TVETs/ATVETs. The Agenda 2063 has envisioned the need to catalyze education and skills revolution and actively promote science, technology, research and innovation, to build knowledge, human resources, capabilities and skills for the African century. To achieve this, it has earmarked strengthening technical and vocational education and training through scaled up investments, the establishment

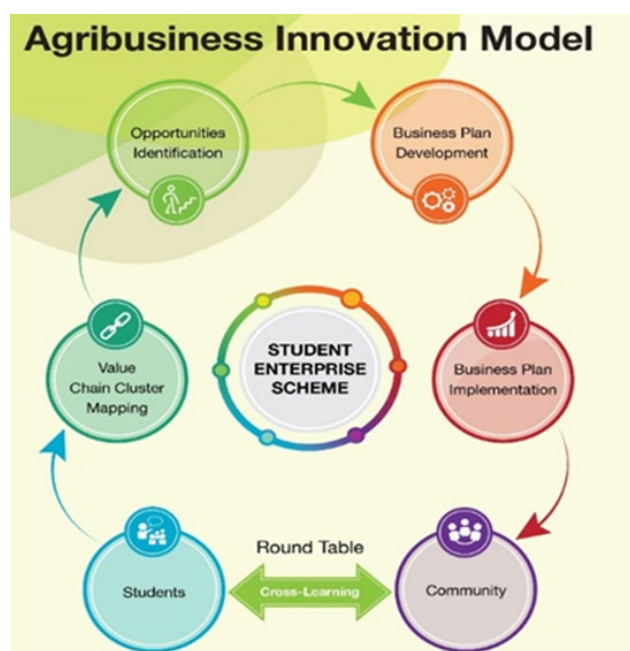


Figure 6. Agribusiness innovation model

of a pool of highquality TVET centres across Africa, greater links with industry and alignment to labour markets, with a view to improve the skills profile, employability and entrepreneurship of especially youth and women, and closing the skills gap across the continent (AUC, 2014). Accordingly, TVET has gained ground as a winner in the ‘race to the top’ of government priorities for education and national development agendas. The African Union has further strengthened this priority setting with the development of a strategy to revitalize TVET in Africa. Several African governments have followed suit by mainstreaming TVET in their national development agenda. Further, African governments are being urged to further expand their investment in technical and vocational skills development if Africa is to generate the internal growth capable of addressing the unemployment and underemployment of youth and adults, and of creating businesses, jobs and substantial economic revenue (Marope *et al.*, 2015).

RUFORUM recognised the immense contribution TVETs particularly the ATVETs contribute to agriculture. Firstly, from a historical perspectives that a cadre of well-trained hands on and practical graduates often emerged from the ATVET institutions and created a vibrant interaction with farmers in the 1970s through to 1980s and early 1990s. Secondly, universities have a role to play in keeping the quality of ATVET training at top-notch and that ATVET institutions have a role to inform the universities of the critical facets of relevance that are needed at community level so that training is matched to the requisite skills and innovations needed in the industry. RUFORUM conducted a TVET/ATVET scoping study in Kenya and Uganda with lesson learning from Ghana, Rwanda, Benin, and Germany to identify areas of strategic interface between universities and TVET institutions (Figure 7). Further, in seeking to foster University-TVET/ATVET partnership and cooperation, seven principles ought to be taken into consideration including: i) the capacity of university to deliver in terms of resources, staff, strategic direction, relevance and commitment; ii) mutual recognition and respect; iii) complimentary not subsidiarity; iv) high level leadership commitment; v) incentives of both institutions undertaking the engagement; vi) good understanding of the labour market; and vii) stakeholder engagement including private sector. It is further important to note that in this current process and effort, universities ought not to seek to transform TVET/ATVET to operate like them but rather build a culture of collaboration and mutual benefit in which the working relationship between university graduates and TVET/ATVET graduates is closer with common understanding of skills enhancement and differentiation.

Conclusion

Africa is a vast continent whose agricultural development is as complex as its production ecosystems. However, the common denominator to this complexity is the fact that positive growth is happening in the continent and this growth needs to be sustained. To sustain this growth, Africa’s agricultural universities need to act fast and match-up to the rapid transitions and accelerations taking place in the continent by providing innovations,

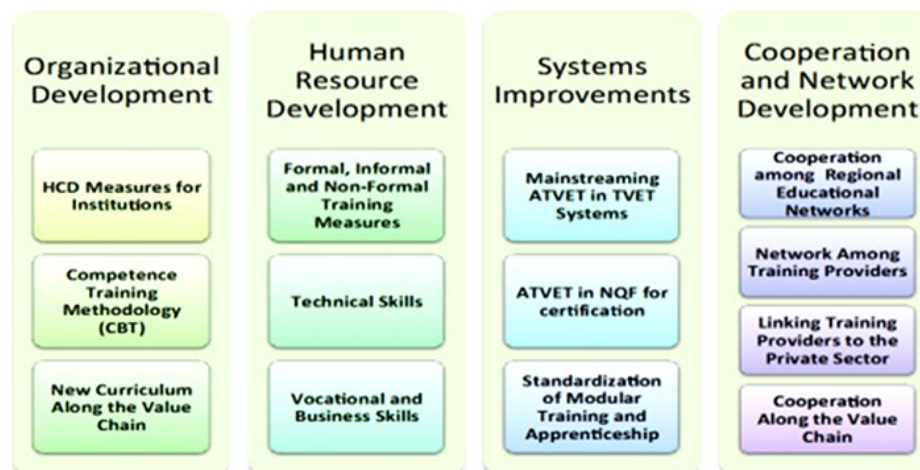


Figure 7: Conceptualization on focus areas for engagement with TVET

technologies and engaging with communities to address real community and agricultural commodity value chain challenges as well as facilitate technology uptake through provision of quality information relevant to farming communities and agricultural value chain actors. This article has demonstrated that pushing the frontier of Africa's agricultural universities to contribute to Africa's growth and development will require implementation of diverse approaches, models at varying levels and timescales; thus 'a no one size fits all' perspective should be maintained at all times. Piloting these models is critical in providing lessons prior to scale-out deployment. Institutional perquisites such as a buy-in of top university management and community culture and organisation are necessary pivots for success. It is also important that universities continue to explore innovative approaches to engage other stakeholders such as the TVET/ATVET that are important players in agricultural transformation and development process in Africa.

Acknowledgement

The inspiration and orientation for this paper came from the Workshop on Capacity Building for Scientific Relevance in African Agricultural Universities convened at Sokoine University of Agriculture, Morogoro Tanzania, September 14-16. The workshop was organized and implemented by the Ohio State University Innovative Agricultural Research Initiative (iAGRI) and supported by UC DAVIS and its Norman Borlaug Leadership Enhancement in Agriculture Program (Borlaug LEAP). Both iAGRI and Borlaug LEAP were projects supported by the United States Agency for International Development (USAID).

References

- The Economist Intelligence Unit; available from: https://www.eiuperspectives.economist.com/sites/default/files/Social_Innovation_Index.pdf
- African Development Bank, 2014. Tracking Africa's progress in figures. AfDB Group; available from: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Tracking_Africa%E2%80%99s_Progress_in_Figures.pdf
- African Development Bank, 2017. African Economic Outlook 2017, Entrepreneurship and Industrialisation. AfDB Group. Available from: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AEO_2017_Report_Full_English.pdf
- African Union Commission. 2014. The Agenda 2063; Africa we Want. <http://archive.au.int/assets/images/agenda2063.pdf>
- AGRA. 2016. Africa Agriculture Status Report 2016: Progress towards Agricultural Transformation in Africa. AGRAA-ASSR. Available from: <https://agra.orgaasr2016/public/assr.pdf>
- Confidente. 2017. Africa's growth trajectory in 2017. Confidente; available from: <http://www.confidente.com.na/2017/02/africas-growth-trajectory-in-2017/>
- Diop, M. 2016. Foresight Africa 2016: Banking on agriculture for Africa's future. Brookings. Available from: <https://www.brookings.edu/blog/africa-in-focus/2016/01/22/foresight-africa-2016-banking-on-agriculture-for-africas-future/>
- Dogbevi, E.K. 2017. FDI inflows into Africa projected to reach \$57b in 2017. Creative Imaginations Publicity. Available from: <https://www.ghanabusinessnews.com/2017/05/22/171587/>
- Hirsch. A. 2017. Africa is poised for sustainable growth and development. But there are risks. The Conversation, SAST. Available from: <http://theconversation.com/africa-is-poised-for-sustainable-growth-and-development-but-there-are-risks-70869>
- Jayne, T.S., Traub, L.N. 2016. Megatrends Transforming Africa's Food Systems. <https://www.foreignaffairs.com/sponsored/megatrends-transforming-africas-food-systems>
- Kalule, S.W., Odongo, W., Kule, E., Ndyomugenyi, E.K., Omara, P. and Ogeng, D. 2015. Conceptualizing the Student-Centered Outreach Model for experiential learning and community transformation. *African Journal of Rural Development* 1 (3): 219 – 227.
- Marope, P. T. M., Chakroun, B. and Holmes, K. P. 2015. Unleashing the potential: transforming technical and vocational education and training. UNESCO Publishing, 225pp.
- Mayaki, I. 2016. The three ways to transform agriculture in Africa. World Economic Forum, Available from: <https://www.weforum.org/agenda/2016/05/3-ways-to-transform-agriculture-in-africa/>
- Moyo, J.M., Bah, E.M., Verdier-Chouchane, A. 2015. Transforming Africa's Agriculture to Improve Competitiveness. AfDB; available from: <http://www3.afdb.org/publications/transforming-africa-s-agriculture-to-improve-competitiveness>

- weforum.org/docs/WEF_ACR_2015/ACR_Chapter2.1_2015.pdf
- OECD-FAO. 2016. Agriculture in Sub-Saharan Africa: Prospects and challenges for the next decade. FAO; available from: <http://www.fao.org/3/a-BO092E.pdf>
- Robinson-Pant, A. 2016. Learning knowledge and skills for agriculture to improve rural livelihoods. United Nations Educational, Scientific and Cultural Organisation (UNESCO), Rome-Italy pp 144. Available from: <http://unesdoc.unesco.org/images/0024/002457/245765e.pdf>
- Rodrik, D. 2016. An African growth miracle? Journal of African Economies, 2016: 1-18.
- The Economist. 2016. Old problems, new solutions: Measuring the capacity for social innovation across the world. NIPPON Foundation. Available from: https://www.eiuperspectives.economist.com/sites/default/files/Social_Innovation_Index_0.pdf
- Warschauer, W. 2016. How Digital Is Solving Three Problems in Agriculture. Technoserve Blog. Available from: <http://www.technoserve.org/blog/how-digital-is-solving-three-problems-in-agriculture>