



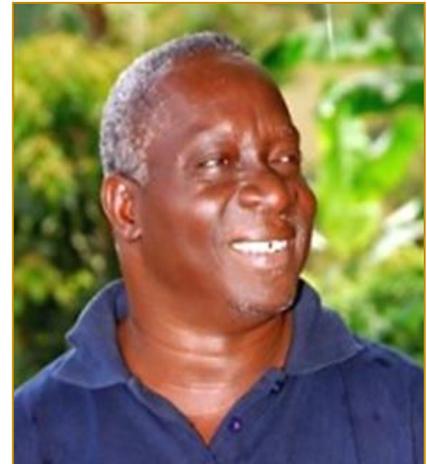
A Transformation Agenda for Tertiary Agricultural Education Institutions in Africa



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Introduction

The current and emerging challenges of agriculture and food systems in Africa are enormous and include, among other factors, (i) rapid growth in demand for food, (ii) rapid commercialization of agriculture, (iii) lagging productivity in production, (iv) changing consumption patterns, (v) climate change, (vi) inadequate transportation infrastructure, (vii) limited electrification, and (viii) poorly developed agro-industries. To address these challenges, tertiary agricultural education (TAE) institutions must transform themselves to enhance the quality and relevance of the services they provide.



This paper summarizes pathways for transforming TAE institutions, drawing on the insights of the 40 writers who contributed chapters in a recent book on *Transforming Tertiary Agricultural Education in Africa* (Kraybill, Lynam and Adipala, 2022). The book was sponsored by RUFORUM, funded by Mastercard, and published by CABI (<https://www.cabi.org/bookshop/book/9781789246544/>).

Leadership, Management and Quality Assurance

Drawn from Chapter 6, "Leadership and Change Management to Transform Tertiary Agricultural Education Institutions" by Mabel Imbuga, Daniel N. Sila, and John Wesonga; also from Chapter 10, "Quality Assurance in Tertiary Education in Africa" by Violet Makuku and Salome Bukachi.

Innovative TAE institutions in Africa are guided by an entrepreneurial vision based on evidence on labour market trends and on the knowledge and technology required for economic and social development. Academic leaders in these institutions do not wait for change to be forced upon them but, instead, proactively lead their institutions in new directions. Their leaders cultivate in themselves and their colleagues the critically-important dynamic capabilities of sensing, seizing and transforming (Teece, 2018).

Sensing in tertiary education leadership is the use of data and analysis regarding the training, knowledge and technology needs of the country and region where the TAE institution is located. The sensing capability manifests itself through (i) the alignment of institutional strategies with national, regional and continental priorities, (ii) the development of linkages with industry, (iii) interactions with communities and (iv) knowledge of best practices, such as learner-centred education and theme-driven research. Quality-assurance standards and procedures are also important components of the sensing capability. Seizing is the ability to move an academic institution or a team towards action. Once an evidence-based and compelling vision and narrative have been developed, dynamic leaders communicate, motivate, assemble and coordinate the required human, material and financial inputs. The seizing capability is the capacity and willingness to engage internal and external stakeholders, maintain open communication even in times of difficulty and conflict, build partnerships and networks and create sound policies and internal systems. *Transforming* is the reshaping of organizational culture, creation of shared values, empowering of colleagues and subordinates, embracing of innovation, and scaling up of



plans developed through sensing and seizing. Leaders possessing sensing, seizing, and transforming capabilities empower their institutions to learn from successes and failures, thereby constantly improving over time.

Curriculum, Teaching and Learning

Drawn from Chapter 7, “Transformative Curricula and Teaching Methods to Meet Labour Market Needs in Tertiary Agricultural Education in Africa” by Keba Hulela, Joseph Mukuni, Might Kojo Abreh, Joseph Amooti Kasozi and David Kraybill.

Employability, including self-employment, is a widely held societal goal of higher education. To improve the employability of graduates, academic programs must target the competencies required by employers and the self-employed. Information about the required competencies is not readily available in most countries and therefore, higher-education systems and institutions must invest in labour market research and make the findings available to academic leaders, curriculum planners, and teachers. Competencies to be targeted can be identified through dialogue with employers and entrepreneurs, graduate tracer studies, and analysis of the task required by major occupations. Research should identify the competency gaps of graduates and learning objectives should be revised accordingly. Transformative TAE institutions can then identify effective curricular content, teaching methods and learning environments to support students in achieving those learning objectives. To gain the desired level of mastery, students need active and experiential learning activities, including laboratory exercises, fieldwork, industry and community exposure, internships, individual and group project- and problem-based learning and service learning.

Transformative TAE institutions make use of the vast literature on the processes and stages of learning. They promote and support the use of pedagogical methods that facilitate active learning. Their educators encourage active inquiry by their students, aiming for them to achieve mastery of knowledge and skills, including soft skills, such as critical thinking and oral and written communication. Aware that many of their academic staff members have little or no formal training in pedagogy, transformative TAE institutions provide workshops and other training opportunities for teachers in the setting of learning objectives and the use of active-learning methods.



High- quality teaching is recognized and valued in transformative TAE institutions through rewards and accountability measures. Rewards may take the form of public recognition at annual ceremonies or include monetary awards, such as travel grants, book and computer allowances, personnel promotions and salary increases. Accountability measures include curricular review and peer and student review of teaching.

Research and Innovation

Drawn from Chapter 8, “Transformative Research and Innovation Capacity in Tertiary Agricultural Education in Africa” by Clesensio Tizikara, Paul Nampala, David Nielson, Nienke Beintema, Patrick Okori and John Lynam.

The research goals of the transformative TAE institution are to produce useful knowledge and technology, train the next generation of researchers, ensure relevance of the curriculum, keep the skills of faculty up-to-date, and participate in international research networks. The transformative TAE institution views research as an interim rather than final output. Research publications are essential for communicating findings to scientific colleagues, but they are not sufficient to provide society with a reasonable return on its investment in the research process. Innovation is the process of translating research findings into solutions to economic, social and environmental problems. Whenever possible, transformative TAE institutions extend the research process by producing innovations and sharing ideas to improve human well-being and environmental sustainability based on the knowledge they have generated.

The leaders of these transformative TAE institutions understand that the volume and quality of innovations can be increased by establishing an internal value chain for research, beginning with the initial inquiry and ending with dissemination - and, where appropriate, commercialization - of information and technologies. They assist their researchers in convening community and private stakeholders to stimulate research-based innovation. Such engagement informs researchers of problems to be investigated and provides insights into how the new knowledge can be translated into solutions. The internal research value chain in transformative TAE institutions includes provision of research services, such as notifying researchers of grant opportunities, convening research teams to prepare proposals, promoting and supporting research partnerships, providing efficient financial management and timely dispersal of research funds, supporting the mentorship of young researchers by senior researchers, securing funding





for research infrastructure and equipment, managing intellectual property, supporting prototyping of innovations, providing editorial and communication support for dissemination of findings and convening research and innovation conferences.

Researchers in transformative TAE institutions work in multidisciplinary and multi-agency teams, and leaders support and reward the resulting teamwork. This is important because many of the pressing issues in agriculture and food systems are multi-faceted and require investigation by researchers from multiple disciplines. In addition to promoting collaboration across disciplines, transformative TAE institutions promote collaboration with outside organizations. Transformative TAE institutions also collaborate with the private sector, communities and NGOs to develop particular innovations and build innovation ecosystems (see next section).

In particular, transformative TAE institutions collaborate intensively with National Agricultural Research Institutions (NARIs) to develop research proposals and carry out research projects. Their graduate students conduct their research in NARI labs and test sites where they engage in research collaborations with local, regional and international institutions and networks. Compared to NARIs, TAE institutions have an advantage in undertaking disciplinary research, supported by graduate students, whether plant breeding, pathology, soil science, food technology, etc. In some cases, multi-disciplinary programs are developed focused on problems of core stakeholders. Given the limited research capacities in African countries, TAE and NARI research should be complementary and reinforce each other.

Outreach and Community Development

Drawn from Chapter 9, “Transformative Outreach in Tertiary Agricultural Education in Africa” by Milcah Mulu Mutuku, Nancy W. Mungai, Duncan Ongeng, Daniel Sherrard and Festus Annor-Frempong.

Engaging with organizations, groups and individuals outside the university is a high priority of transformative TAE institutions. They engage in two-way information-sharing with a variety of external groups or communities, including farmers, businesses, citizens’ groups, NGOs and local and national governments.

Community engagement is a particularly effective way in which transformative TAE institutions can discover and understand current and emerging economic, social and cultural needs. The





information and understanding gained by faculty and students through community engagement aids in (i) identifying competencies needing to be taught in academic programmes, (ii) providing experiential learning opportunities for students, and (iii) identifying relevant research topics, sites and populations to be studied by both students and faculty. Engaging with communities has a catalyzing influence on the mindsets of faculty and students. It changes the internal culture of an institution, motivating it to be outward looking, innovative, entrepreneurial and socially responsive. University interactions with the community build knowledge-driven and mutually beneficial external partnerships. Curricula, course content and teaching methods evolve as faculty and students gain a deeper understanding of the knowledge and skills needed to solve pressing societal problems. Research agendas become more relevant as faculty, students and communities work together to conduct research which produces information, procedures and technologies to solve real-world problems. Inspired by their community engagement experiences, graduates of transformative TAE institutions leave their universities committed to lifelong learning and inspired to continue to make a difference in the world.

In the transformative TAE institutions, outreach is a prioritized activity, equal to teaching and research. It is promoted in universities through both the formal system (e.g. mission and vision statements, strategy documents, policies and incentive and support systems) and the informal system (e.g. the institutional culture). Outstanding outreach is recognized and rewarded through staff promotion, tenure, annual performance evaluation, salary and public recognition (e.g. through annual award ceremonies). Whenever possible, faculty and students are encouraged to link outreach to teaching and research rather than to view them as separate activities.

Entrepreneurship

Drawn from Chapter 12, “Entrepreneurship and the Role of Universities in Generating Youth Employment in Africa” by Anthony Egeru, Sylvanus Mensah, Serge Abihona and Adnane Alaoui Soulimani; also from Chapter 13, “Transformative Technical and Vocational Training in Tertiary Agricultural Education in Africa” by Abraham Sarfo and Caroline Mutepefa.

Entrepreneurship training is an important way in which transformative TAE institutions, both universities and training institutes, build the livelihood and leadership capabilities of youth and





adults.¹ The most important contribution of TAE institutions to entrepreneurship can be made in the early startup stage, a period when businesses face enormous challenges and failure rates are high. They do this by providing training and support for early-stage entrepreneurs through courses and workshops on the principles and practices of entrepreneurship and by establishing and operating business incubators, hubs and accelerators. They also connect and partner with the private sector and other actors in the innovation ecosystem, and they help reform national and local policies affecting entrepreneurs.

Problem-based, practical and experiential learning is a primary pillar of entrepreneurship programmes in transformative TAE institutions. After completing core courses in developing a business plan, students and participating community members are given the opportunity to launch an enterprise in a business incubator operated by the university or other organizations. Mentoring of student entrepreneurs is provided by established entrepreneurs, including the institutions' graduates who have become successful entrepreneurs.

The transformative TAE institution is an active member of Pan-African networks promoting entrepreneurship. These networks, such as the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and Comprehensive Africa Agriculture Development Programme (CAADP), are sources of activities and programmes to (i) train the trainers, (ii) train entrepreneurs, and (iii) model entrepreneurship and incubation programmes, which can be adapted by TAE institutions to suit their local needs and contexts.

Inclusivity

Drawn from Chapter 11, "Gender Considerations and Practices for Transforming Tertiary Agricultural Education in Africa" by Jemimah Njuki and Salome Bukachi.

A commitment to inclusivity permeates the processes underlying student recruitment, student admissions and services, staff hiring, academic programmes, course content, teaching methods and research and outreach in transformative TAE institutions. The aim of inclusivity in higher

¹ TAE institutions differ in where entrepreneurship training is housed and how it is treated in the curriculum. In some institutions, it is housed in an agricultural economics department or a business school and the two may offer joint courses. In some institutions, it is taught as a specialization culminating in a degree while in other institutions, it is taught as a topic within degree programs of food technology, agricultural engineering, animal production systems, or other disciplines.





education is to increase the representation of students and staff from under-represented groups and to transform organizational culture and mindsets - and hence, academic and institutional services - to reflect greater diversity of ideas, interests and realities. For TAE in Africa, inclusivity means facilitating the inclusion of women, individuals with disabilities and economically disadvantaged students.

Transformative TAE institutions embrace equality of women as essential to human rights, strengthening households and communities and improving agricultural productivity. Gender equality is embedded in the institutional policy and organizational culture. Formal and informal leaders shape the organizational culture through their attitudes and actions, influencing the mindsets of staff and students towards mainstreaming gender equality across their institutions. Transformative institution mainstreams gender through policies, structures and processes, including targeted scholarships, policy and practices addressing sexual and other violence toward women, increased hiring of female educators and leaders, gender-informed pedagogy, gender sensitization training, mentoring and relevant infrastructure improvements. Researchers in transformative TAE institutions examine a wide range of topics through the lens of gender. Their research teams often include a gender specialist and many of their agronomists, plant breeders, soil scientists, economists, engineers and other scientists have attained secondary specializations in gender.

Networking and Partnerships

Drawn from Chapter 14, "Network Approaches to Transforming Tertiary Agricultural Education in Africa" by Florence Nakayiwa and John Lynam; also from Chapter 16, "Transnational Partnerships in Tertiary Agricultural Education in Africa" by Peter Koehn, David Kraybill and Isaac Minde.

The internal processes leading to transformation of TAE institutions are enhanced and facilitated by external institutional linkages. Within their home country, transformative TAE institutions are strongly linked with national agricultural research institutes (NARIs), other research institutes, and private sector organizations that are part of the national agricultural innovation system.

Within the African continent, transformative TAE institutions participate and are trend-setters in tertiary education partnerships such as RUFORUM. By operating at a regional and sub-regional level, RUFORUM generates economies of scope and fosters specialization in areas with





significant capacity constraints, especially in the development of high-quality, graduate programmes. RUFORUM aids faculties in filling capacity gaps through collaborative graduate programmes, competitive research grants, and training on methods and technology to improve teaching. Through meetings, electronic communication channels, and printed publications, member institutions learn about high-quality programmes in other institutions, providing a constructive environment in which best-practice models of teaching, administration and research can evolve.

Transformative TAE institutions build global connections through transnational partnerships with universities in both the Global South and the Global North. These partnerships vary in their scope with some limited to research while others are comprehensive capacity-building initiatives. In both cases, transnational partnerships are a means for TAE institutions to develop capacity to meet global standards and to gain global visibility and access to global fundings.

Conclusion

Population, food-system, and environmental challenges present TAE institutions with an opportunity to produce human capital, knowledge and technology to fill resource gaps and provide sustainable solutions. To seize this opportunity, TAE institutions must transform themselves internally. The transformation agenda described in this paper is demand-driven, strategic, collaborative and adaptive. The goal of the agenda is to unlock the talents of faculty, students and graduates and facilitate collaboration with farmers, consumers, communities, businesses and governments to solve the practical problems of agricultural and food systems. Human talents and ingenuity are unlocked and fostered in an institutional environment which embraces innovation and change, rewards achievement and provides the necessary environment, infrastructure and equipment. The task of TAE leaders is to create strategies, structures and systems in support of such an environment.

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