

Towards Impact and Resilience

Towards Impact and Resilience:
Transformative Change In and Through
Agricultural Education and Training
in Sub-Saharan Africa

Edited by

Frans Swanepoel, Zenda Ofir
and Aldo Stroebe

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P U B L I S H I N G

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Zenda Ofir is a South African international evaluation specialist. With a PhD in Chemistry, she initially worked as manager in a South African science council, responsible for *i.a.* national higher education/industry research programmes on biotechnology and on food production and security, and later as Director Research at the University of Pretoria. Since then she has worked on assignments in nearly 40 countries on four continents, conducting evaluations, facilitating the design of monitoring and evaluation systems and helping programmes and organizations clarify their change logic ('theories of change') towards impact. She has done extensive work in the agriculture sector for *i.a.* Rockefeller Foundation, the International Fund for Agricultural Development (IFAD), the Alliance for a Green Revolution in Africa (AGRA), the Consultative Group on International Agricultural Research (CGIAR) and AWARD, a Bill and Melinda Gates Foundation funded programme cultivating African women leaders in

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FOREWORD

Africa is growing - economic growth has continued to rise steadily at an average of five percent per annum for the past decade. At the same time the continent's population continues to expand and it is expected that Africa's population will quadruple within the next century. In the decades to come, this continued expansion will require a concomitant increase in employment opportunities, the acceleration of economic transformation and a substantial upsurge in agricultural production in order to ensure food and nutrition security for this ever-growing population.

As a sector, agriculture has the potential to contribute significantly to food and nutrition security whilst simultaneously driving inclusive economic growth. More than two-thirds of the African population rely on agriculture for their livelihood (including income) and the sector represents a third of the continent's GDP. From this vantage point, efforts to improve farmer productivity and incomes can drive demand and growth in other economic sectors. In fact, the World Bank has calculated that growth in the agriculture sector is 2.5 times more effective at reducing poverty than growth in other sectors, and more recently research has shown that in sub-Saharan Africa agriculture is eleven times more effective than any other sector at reducing poverty. Although almost all African countries could realize greater potential from agriculture, wide disparities in the extent to which countries prioritise investments and policy reform remain pervasive. Despite its abundance of natural resources – if Africa is to realize the potential of its agricultural sector – intervention is needed to overcome inadequate infrastructure, the insufficient high-level human and research capacity, the paucity of enabling policy and business environments, and the need for increased public, private and donor funding.

Ten years ago, at the African Union summit held in Maputo, African leaders made a bold commitment to reverse the underinvestment that continued to hold back the sector by pledging to allocate at least ten percent of national budget to agriculture, adopt sound agricultural development policies and achieve at least six percent agricultural growth. Regardless of the country-specific plans developed through the Comprehensive Africa Agriculture Development Programme (CAADP), progress on the Maputo declaration targets has been inconsistent and

erratic with many countries falling short of their intended targets. The absence of proper governance structures – including the lack of accountability structures and tracking mechanisms – continue to stunt progress and development, particularly in priority areas such as bolstering human capital development and addressing the gender gap.

In the above context, the need to transform agricultural education and training to improve its effectiveness and efficiency is now clearly recognized by African leaders and development partners. The Ministerial Conference on Higher Education in Agriculture (CHEA) held in Uganda (2010) and the creation of the Tertiary Education for Agriculture Mechanism for Africa (TEAM-Africa) in September 2012 represent both the urgency of and the unified response to the need for substantial shifts in AET. The support of prominent African institutions, for example the African Union (AU), the New Partnership for Africa's Development (NEPAD), the Forum for Agricultural Research in Africa (FARA) and the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) attest to this.

It is an opportune time during 2014, the AU Year of Agriculture and Food Security, to reconsider the continent's approach to AET. At the upcoming AU summit in July 2014 African leaders will review the Maputo Declaration to make new policy commitments for the next decade. At the same time, CAADP is undergoing a reform process to ensure that it can provide more effective guidance and deliver an improved results framework. In addition, as we move forward to finalise the continent's vision for the next 50 years - Agenda 2063 - it is encouraging that this book *Towards Impact and Resilience: Transformative Change in and through Agricultural Education and Training in sub-Saharan Africa* is published at this time.

The authors recognize that AET should be a top priority in the continent's development through the education of human capital. The book is broadly divided into four parts: the African context, particularly sub-Saharan Africa (highlighting FARA's contribution in capacity development and strengthening); relevant global experiences (including Europe, Asia and South America); lessons in AET from sub-Saharan Africa; and critical success factors including systems approaches, mainstreaming gender, quality assurance, financing, agricultural innovation and entrepreneurship. The concluding chapter synthesizes these ideas, experiences and evidence in order to highlight critical areas and proposes potential solutions.

As African leaders are planning for Africa's response to the post-2015 African agenda that will replace the Millennium Development Goals a

vibrant, resilient and effectively functioning AET system is needed more than ever. I commend the editors of this book for their relentless commitment to an African AET system which can deliver a strengthened platform from which African agriculture can continue to grow and contribute to the continent's development and prosperity.

—*Professor Monty Jones*

Special Advisor to the President of Sierra Leone
Immediate past Executive Director, FARA and Chairperson GFAR
World Food Prize Laureate 2004

PREFACE

The University of the Free State (UFS), South Africa, received a grant from the W.K. Kellogg Foundation (WKKF) to establish partnerships, interrogate agricultural education and training (AET) models, share information, and develop together with partners and key actors on the continent a proposal for a project that could transform the agricultural education and training sector in sub-Saharan Africa. Good progress was made in some aspects, in particular in cultivating partnerships and networks, and gaining and sharing insights into what may work in a long-term effort to develop the sector. However, due to changes in WKKF's representation in southern Africa, the project did not continue as intended. Instead, the project energies and resources were redirected to produce a high quality, highly relevant and tangible output in the form of this book. The book has been developed to ensure that the knowledge obtained through the work done is consolidated and enriched by the expertise of leading figures in the field of AET in Africa and worldwide.

The global and continent-wide trends affecting agriculture, and the extraordinary opportunity offered by Africa's increasingly critical role in the world, highlight the need for a dramatic increase in agricultural expertise, as well as a shift in focus, over the coming decades. Skills for farm productivity and employment in the public sector need to expand to include those in post-farm value-addition, related policy and regulatory issues, and private sector employment. Entrepreneurs, exporters, importers, and suppliers have also become more interested in African agriculture since the agricultural commodity "price bubble" of 2007–2008, drawing attention to the need for a similar upgrade of skills in areas such as business and financial management, marketing, and communications.

Appropriate and adequate education and training at all levels and in many spheres are therefore essential for a revitalised agricultural sector. Agricultural development underpins all other development efforts. For example, the World Bank, in a 2006 synthesis of an institutional, regional, and international review, argues that the contributions of agricultural education and training lead to a variety of significant productivity increases. The importance of agriculture for development, and the role of AET within agriculture, have also been reinforced by USAID and other prominent actors. A mechanism—TEAM-Africa (Tertiary Education for

Agriculture Mechanism)—has been established and endorsed by the African Union, the Forum for Agricultural Research in Africa, and the NEPAD Planning and Coordination Agency to define and promote transformation of the agricultural education sector, as well as to facilitate, convene, and coordinate stakeholders and reform initiatives on the continent.

More specifically, in a highly competitive, innovation-driven, and knowledge-intensive world, development strategies need to include as a top priority the education of human capital through quality higher education. Development takes place when effective institutions and productive enterprises are supported and advanced by the collective generation and use of knowledge and the expansion of social and technological capabilities that lead to—and build on—transformative change.

Twenty-two esteemed international and African scholars contributed to this manuscript, which aims to transform the AET sector for the benefit of agriculture and development in sub-Saharan Africa. Consisting of seventeen chapters, the book focuses on clarifying the challenges, issues, and priorities of agricultural education and training in SSA and provides suggestions for practical solutions that can help guide organisations interested in furthering AET for agricultural development on the continent.

The book is divided into four sections that focus on: 1) predicting and illuminating the context in Africa, and particularly in SSA, within which AET will have to flourish over the coming decades; 2) highlighting relevant experiences from around the world—from Europe, North America, Latin-America, and Asia (especially South and Southeast Asia)—in developing human potential through agricultural education and training; 3) drawing lessons in agricultural education and training from relevant experiences in sub-Saharan Africa; and 4) addressing critical issues for success—systems, quality, gender, financing, innovation, and entrepreneurship. The concluding chapter synthesises the ideas, experiences, and evidence from the chapters in order to highlight critical issues as well as possible solutions.

The book is uniquely positioned to support a call to action on AET, to pull together state-of-the-art knowledge from within and outside SSA, and to advance out-of-the-box thinking about the principles, values, and character of AET for development, with an emphasis on the models that can help to cultivate leaders and change-makers at all levels of the agricultural sector.

ACKNOWLEDGMENTS AND PEER-REVIEW PROCESS

The Editors would like to acknowledge the valuable support and participation of all contributing authors, the Editorial Advisory Committee, individuals who provided editorial assistance, and organisations for financial and other support.

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Special mention is due to Prof. Mandi Rukuni, former Director of the WKKF Africa Office, who conceptualised this project, for his unwavering support and commitment throughout.

We gratefully acknowledge the Stellenbosch Institute for Advanced Study (STIAS) for their support through appointment of one of the Editors as a Fellow to focus on this work.

Peer Review Process

The chapters in this book have been reviewed by persons chosen for their diverse perspectives and technical expertise in accordance with procedures required by the Department of Higher Education and Training, South Africa. In order to maintain and ensure the highest quality, a three-stage review process was followed:

1. A group of expert international and African authors were invited to prepare and present draft outlines of their chapters at a workshop held in Cape Town in 2010. The presentations were assessed over a three-day period by these peers as well as the Editorial Advisory Committee. The focus and content of the chapters and the book were critically assessed, refined, and sharpened.
2. Informed by the workshop consensus, all authors reviewed their chapters and submitted to the Editors. Each chapter was independently reviewed by the Editors and in addition, where necessary, by an acknowledged expert selected to provide candid and critical comments to further improve the content and to ensure scientific soundness. In addition, all chapters were reviewed by an internationally-recognised, independent highly authoritative professional editor.
3. Finally, the manuscript has been peer reviewed by the IAD/Cambridge Scholars Publishing Editorial Board and anonymous reviewers to meet standards of the IAD/Cambridge Scholars Book Series and to warrant international expectations of objectivity, evidence, and responsiveness.

ACRONYMS

2IE	International Institute for Water and Environmental Engineering (Burkina Faso)
AABSA	Association of African Business Schools Agribusiness Consortium
AAC	Agribusiness Consortium
AAPP	African Agriculture Productivity Programme
AAU	Association of African Universities
ABC	Agricultural Business Chamber
ACBF	African Capacity Building Foundation
ACCI	African Centre for Crop Improvement
ACE	African Centres of Excellence
ACE	American Council on Education
ACT	Agricultural Consultancy Training
ACU	Association of Commonwealth Universities
ADA	African Doctoral Academy
ADB	Asian Development Bank
ADC	Agricultural Development Council
ADEA	Association for the Development of Education in Africa
ADII	Agriculture, Development and Innovation Index
AEA	American Evaluation Association
AET	Agricultural Education and Training
AET4D	Agricultural Education and Training for Development
AEZ	Agro-Ecological Zone
AFAPP	African Food and Agricultural Policy Platform
AfrEA	African Evaluation Association
AfriQAN	African Quality Assurance Networks
AFSIP	Agricultural Food Security Plan
AFSRN	Asian Farming Systems Research Network
AgGDP	Agricultural Gross Domestic Product
AGRA	Alliance for a Green Revolution in Africa
AGROCURI	Agricultural Open Curriculum and Learning Initiative
AIAT	Assessment Institutes for Agricultural Technology

AIBP	Agro-Industrial By-Products
AIDS	Acquired Immunodeficiency Syndrome
AIS	Agricultural Innovation System
AKIS	Agricultural Knowledge and Information System
ALO	Association Liaison Office for University Cooperation and Development
AMUL	Anand Milk Union Limited
ANAFE	Agroforestry and Natural Resources Education
ANK	Ansanm Nou Kapab (Together We Can)
APLU	Association of Public and Land-grant Universities
ARD	Agricultural Research and Development
AR4D	Agricultural Research for Development
ARFSN	Asian Rice Farming Systems Network
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASSAF	Academy of Science of South Africa
ASTI	Agricultural Science and Technology Indicators
ATAI	Agricultural Technology Adoption Initiative
ATVET	Agricultural Technical and Vocational Education and Training
AU	African Union
AUCC	Association of Universities and Colleges of Canada
AUF	<i>Agence Universitaire de la Francophonie</i>
AWARD	African Women in Agricultural Research and Development
BA	Bachelor of Arts
BBBEE	Broad Based Black Economic Empowerment
BE	Business and Enterprise
BEAT	Barefoot Education for Africa Trust
BECA	Biosciences Eastern and Central Africa
BI	Bridging Institutions
BMGF	Bill and Melinda Gates Foundation
BRAC	Bangladesh Rural Advancement Committee
BRICS	Brazil, Russia, India, China and South Africa
BSc	Bachelor of Science
CAADP	Comprehensive Africa Agriculture Development Programme
CAMES	<i>Conseil Africain et Malgache pour l'Enseignement Supérieur</i>
CASREN	Crop-Animal Systems Research Network

CBO	Community-Based Organisation
CD	Compact Disc
CGIAR	Consultative Group on International Agricultural Research
CHE	South African Council on Higher Education
CHEA	Conference on Higher Education in Agriculture in Africa / Council of Higher Education Accreditation
CIAT	<i>Centro Internacional de Agricultura Tropical</i>
CIFOR	Center for International Forestry Research
CIIFAD	Cornell International Institute for Food, Agriculture and Development
CIMMYT	<i>Centro Internacional de Mejoramiento de Maiz y Trigo</i>
CIP	<i>Centro Internacional de la Papa</i>
CLA	Community Livestock Auxiliary
CMAAE	Collaborative Masters of Agricultural and Applied Economics
CORAF	<i>Conseil Ouest et Centre Africain Pour la Recherche et le Développement Agricoles</i> / West and Central African Council for Agricultural Research and Development
COS1	Convergence of Sciences Programme
CREST	Centre for Research on Evaluation, Science and Technology
CRP	Consultative Group on International Agricultural Research Research Programme
CRSP	Collaborative Research Support Programme
DANIDA	Danish International Development Agency
DBSA	Development Bank of Southern Africa
DFID	Department for International Development
DGIS	Ministry of International Cooperation
DoE	Department of Education
DP	Development Plan
DP	Development Partner
DS	Diploma Supplement
E&SG	Equitable and Sustained Growth
EAAP	European Association of Animal Production
EAC	European Consortium for Accreditation
EACEA	Education, Audiovisual and Culture Executive Agency

EACI	European Association for Creativity & Innovation
EAPP	East Africa Productivity Programme
EAQA	European Association for the Quality Assurance
EAQAHE	European Association for the Quality Assurance in Higher Education
EARTH University	<i>Escuela de Agricultura de la Region Tropical Humeda</i>
ECA	European Consortium for Accreditation
ECHAE	European Conference on Higher Agricultural
ECTS	European Credit Transfer Accumulation System
EE	Enabling Environment
EHEA	European Higher Education Area
EI	Education International
EIWR	Ethiopian Institute of Water resources
ELLS	Euroleague for Life Sciences
EMBRAPA	<i>Empresa Brasileira du Pesquisa Agropecuária</i> (Brazilian Agricultural Research Corporation)
ENLASA	<i>Enlace Agropecuario S.A.</i>
ENQA	European Association for Quality Assurance in Higher Education
ENSA	<i>Ecole Nationale Supérieure Agronomique</i>
EQAR	European Quality Assurance Register
ERASMUS	European Community Action Scheme for the Mobility of University Students
ESAMI	Eastern and Southern African Management Institute
ESAP	Economic Structural Adjustment Programme
ESCAP	Economic and Social Commission for Asia-Pacific
ESG	European Standards and Guideline
ESIB	National Unions of Students in Europe
ESU	European Students' Union
EU	European Union
EUA	European University Association
EU-RA	European Research Associates
EURASHE	European Association of Institutions in Higher Education
EUROP GAP	Euro retailer produce / Good Agricultural Practice
EURYDICE	Information on Education System and Policies in Europe
FAAP	Framework for African Agricultural Productivity
FAC	Future Agricultures Consortium

FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Statistical Database
FARA	Forum for Agricultural Research in Africa
FDI	Foreign Direct Investment
FEF	Farmer Extension Facilitator
FETAD	Farmer Empowerment through Agribusiness Development
FFS	Farmer Field School
FLS	Farmer Life School
FSR	Farming Systems Research
GCHERA	Global Consortium for Higher Education and Research in Agriculture
GDP	Gross Domestic Product
GEM	Global Entrepreneurship Monitor
GER	Gross Enrolment Ratios
GFAR	Global Forum for Agricultural Research
GIMPA	Ghana Institute of Management and Public Administration
GIZ	<i>Gesellschaft für Internationale Zusammenarbeit</i>
GM	Genetically modified
GNP	Gross National Product
GPI	Gender Parity Index
GTZ	<i>Gesellschaft Technische Zusammenarbeit</i> / German Technical Corporation
H&R	Hit and Run Development
HACCP	Hazardous Analyses Critical Control Points
HED	Higher Education for Development
HEI	Higher Education Institution
HEQC	Higher Education Quality Committee
HIV	Human Immunodeficiency Virus
HLPE	High Level Panel of Experts
HOORC	Harry Oppenheimer Okavango Research Centre
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
IAC	Inter Academy Council
IAD	Institute for African Development
IADB	Inter-American Development Bank

IAR4D	Integrated Agricultural Research for Development
IARC	International Agricultural Research Centre
ICA	Interfaculty Committee Agraria
ICARDA	International Center for Agricultural Research in the Dry Areas
ICP	International Course Programme
ICRAF	World Agroforestry Centre
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT	Information and Communication Technologies
IDA	International Development Association
IDAT	Institutional Development for Agricultural Training
IDRC	International Development Research Centre
IFAD	International Fund for Agricultural Development
IFAMA	International Food and Agribusiness Management Association
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IFSA	International Farming Systems Association
IITA	International Institute of Tropical Agriculture
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
IMRD	International Master Programme in Rural Development
INREF	Interdisciplinary Research and Education Fund
IOCE	International Organization for Cooperation in Evaluation
IP	Investment Plan
IPM	Integrated Pest Management
IPMS	Improving Productivity & Market Success of Ethiopian Farmers
IRDP	Integrated Rural Development Programme
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
ISO	International Standardization Organisation
JFFLS	Junior Farmer Field and Life School
JiT	Just in Time
JKUAT	Jomo Kenyatta University of Agriculture and Technology