

Confronting the Challenge of Agricultural Education and Training

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Today, we are going to think about a single five-letter word with only one vowel: adapt. Adaptive management will be required of us all as we confront the complex adaptive systems shaping our global and local economies and environments. How does adaptive management change agricultural education and training? What is the role of learning in the process on innovation?

During the course of this presentation I want to talk about three things:

- (1) The innovATE project and what it has been doing;
- (2) The dilemma and challenges we face; and
- (3) Shifting paradigms and their implications for agricultural education and innovation.

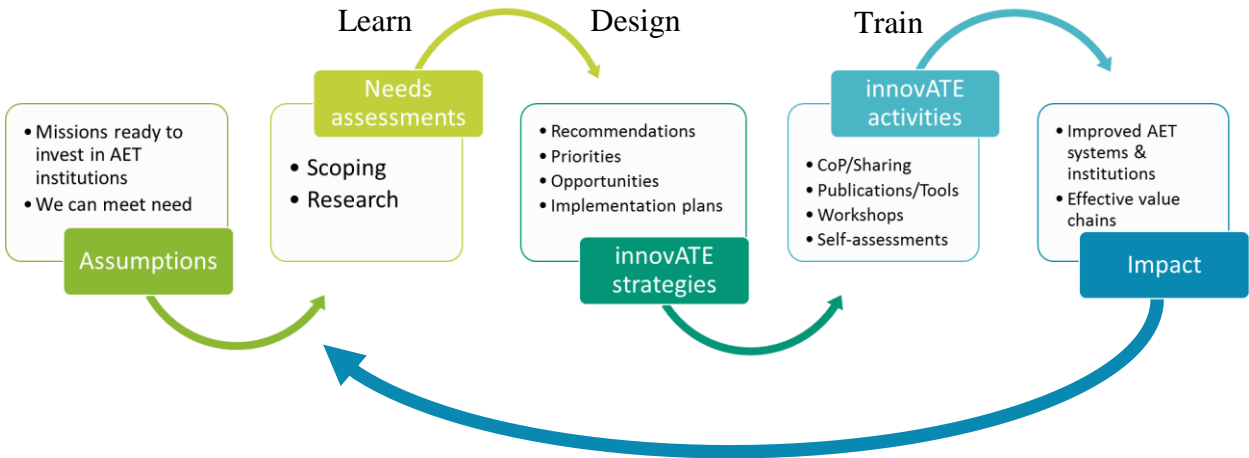


Figure 1: The innovATE Theory of Change

InnovATE's Theory of Change

InnovATE's Theory of Change is based on the assumption that USAID missions are ready to invest in AET institutions and that we can meet that demand. The program is structured by the three components of learn, design, and train. In the learn phase, literature reviews and field investigations are conducted. These lead to the design phase where this learning is transformed: opportunities are identified, recommendations drafted, and implementation plans developed. In the train phase, innovATE activities involve sharing what has been learned and adapted to the specific contexts and communities of practice, publications and tools are developed, workshops held and assessments made. All of this results in measurable impacts in terms of improved AET systems and institutions serving effective value chains. Realization of those impacts feeds back on our learning and we adapt in a new cycle.

This model is demand driven. Research, whether desk or field, focuses on determining the demand for knowledge, skills and attitudes in the agricultural workforce (as expressed by value chain actors). Labor market studies provide the foundation for innovATE analyses and recommendations. The findings of these studies are compared with equally important assessments (self and researcher driven) of the existing agricultural education and training system and targeted institutions. These studies of both the demand for and supply of educated/trained agricultural workforce provides the foundation for gap analyses to identify what changes need to be made at the institution or system level to supply the required quality labor.

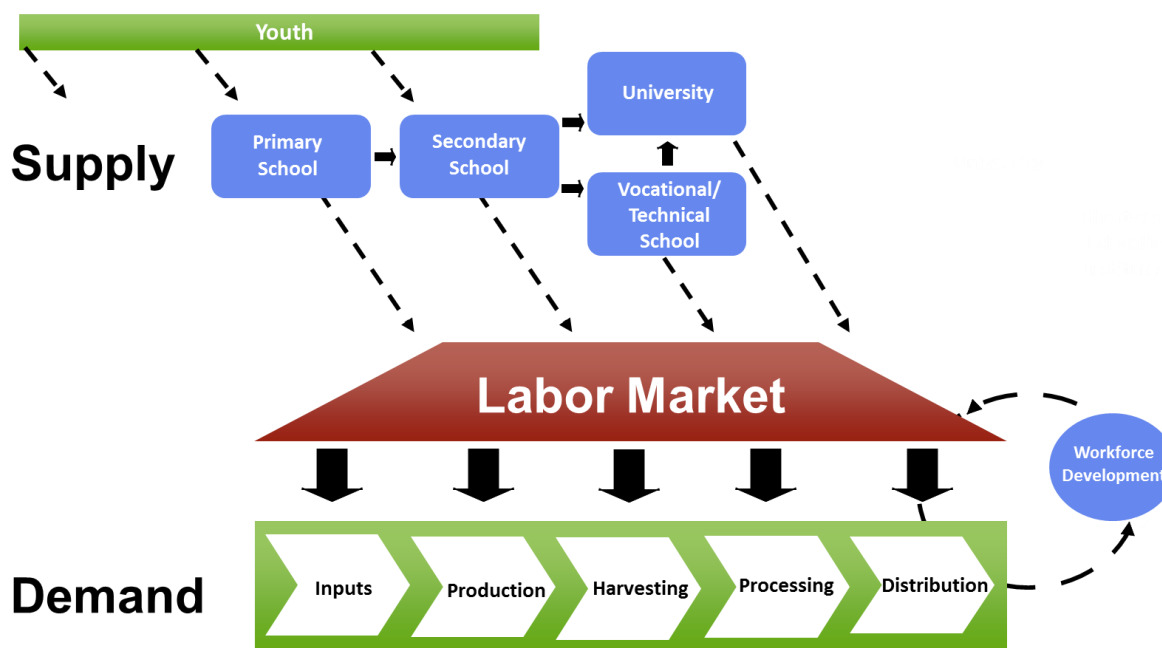


Figure 2: Agricultural Value Chain Demand and Supply of Human Capital

We've seen that there is a growing range of job opportunities available in the agricultural sector of developing countries leading to considerable rural development linkages for further expansion of employment in rural areas. This has occurred due to the increasing demand for food in the growing urban centers. As a consequence, we have found a considerable shift in the demand for

labor throughout our investigations (in the literature and in the field). Interviews with employers consistently repeat similar findings from country to country. No matter the technical expertise sought, employers repeatedly have emphasized the need for soft skills (communication skills, critical thinking, team work, entrepreneurship, and leadership) as well as practical capacities.

In our studies, we've also found that recruiting students for agriculture programs is a challenge. Most students would rather study other subjects. The image of agricultural employment is that of working with one's hands on the farm like one's parents. Most students are fleeing this lifestyle and don't want to return. We've put some effort into developing promotional materials that demonstrates a wide range of agricultural professions and that they are both challenging and remunerative. One of our products will be a promotional video for girls, highlighting the opportunities for new careers for women.

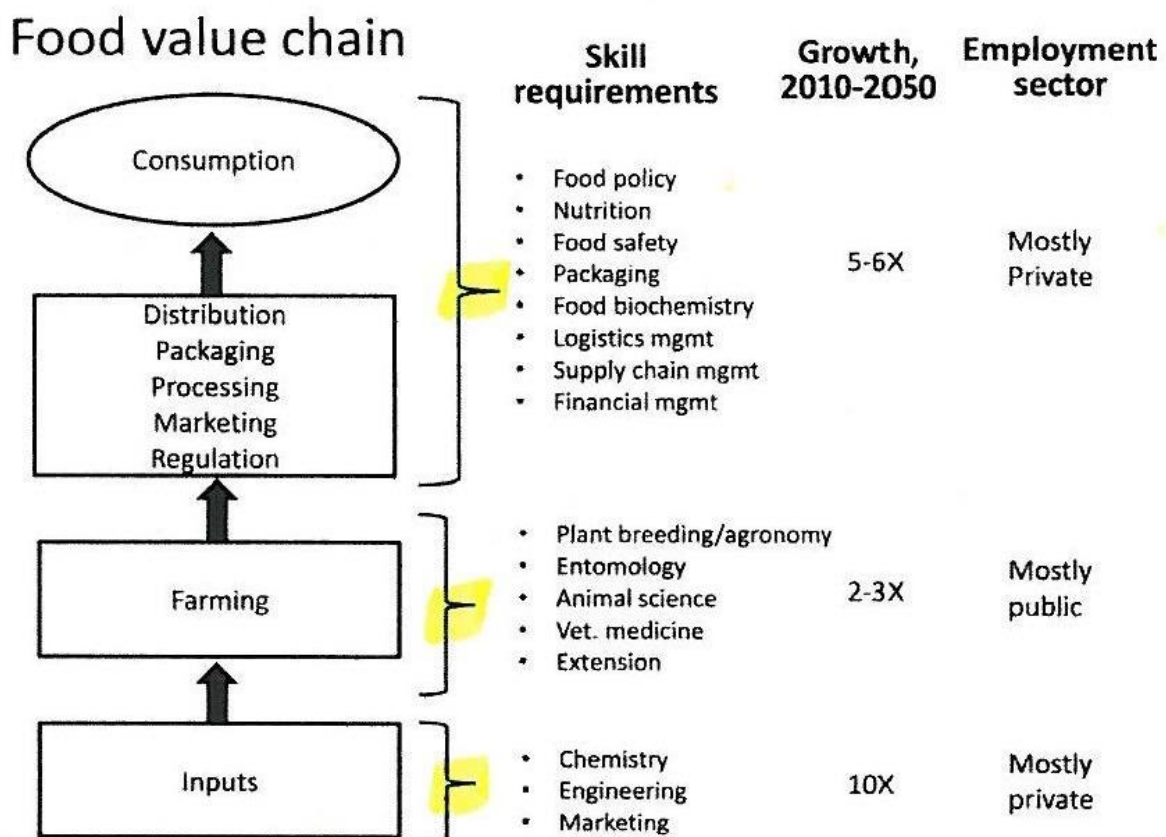


Figure 3: Shifting Focus of Labor Demand (from Tshirley and Dembele, 2011)

The mission of InnovATE has been to strengthen the range of institutions that train and educate agricultural professionals. Our tasks have been to:

- (1) assess AET institutions and systems and the labor markets they serve:
 - a. develop a set of tools to do so;
 - b. conduct institutional self-assessments and system assessments; and
 - c. analyze labor markets for specific value chains.

- (2) identify the appropriate knowledge, skills and tools for them to become more effective in supplying the required workforce:
 - a. pedagogic practices (creating active learners; student-oriented learning; syllabus use; hands-on training); and
 - b. new curriculum (STEM; soft skills: team work, communication, and entrepreneurship; addressing value chain issues from seed multiplication to processing and packaging, nutrition, ICT).
- (3) propose appropriate interventions in specific cases. and
- (4) disseminate the knowledge, skills and tools developed to AET implementers through:
 - a. Communities of practice;
 - b. Workshops and symposia; and
 - c. Webinars and internet forums.

Given that innovATE is a Feed the Future project with a Leader-with-Associates mechanism, we expected to be awarded new associate projects in focal countries to implement system and institutional improvements. This didn't happen; to date, we have only received a single associate award in a non-FtF country.

Current thematic activities

Our initial understanding that innovATE was a project to help transform institutions that supply human and institutional capital in order to respond to the demands of employers. This led to innovATE investing in eight separate country-level scoping activities. Having only achieved one associate award, we have narrowed our focus for the remainder of our project. We believe that the following three thematic areas are critical to improved agricultural education and training to serve targeted value chains: gender in AET; rural workforce development (RWFD); and pedagogy and curriculum development. Our work covering these themes includes a range of targeted products for the donor and practitioner communities.

Gender in AET involves the following themes and activities: Gender, Higher Ed, and AET; Building a roadmap for the gender education pipeline; Muslim Women in AET; Gender issues and recommendations for encouraging women in higher education AET programs; Supporting female faculty members in the agricultural sciences; Careers along the horticulture value chain; and a Gender training module.

Rural Workforce Development is focused on: Youth entrepreneurship in agriculture; RWFD/Value chain case studies; Employment and workforce development for rural and food-based economies; Role of agricultural technical and vocational education and training in; Current RWFD themes and change pathways; and an ATVET training module.

Pedagogy and Curriculum addresses these themes and activities: Degree training and curriculum development to support HICD; Challenges and opportunities for AET in post-conflict Sub-Saharan Africa; A gender, agriculture and nutrition symposium; Linking transformative teaching with sustainable workforce development; Community participatory curriculum development; institutional and program self-assessments; Good practices: Mentoring new faculty; Elements of reasoning; ICT in AET.

These topics highlight important issues that we are pursuing, but we feel like we are deviating from our mission. We have been responding to questions posed by development professionals,

but are they the right questions for advancing AET? Our fundamental assumption seems to have been wrong: that the donor community was ready to invest in AET institutions to help make those changes.

The AET Pipeline

Let's take a look at this from the perspective of the AET pipeline. Youth enter the education system at the primary school level and either matriculate, drop out, or become part of the labor force. The pipeline produces varying numbers of unskilled labor, semi-skilled, skilled and highly skilled workers and professionals. However, employers are often unsatisfied with the results – new employees have poor or inappropriate knowledge, skills and capacities. As a consequence, we are repeatedly asked to fix the faucet at the end of the pipeline – so that a particular project's value chain has the appropriate personnel – rather than build a better pipeline. We end up with interventions focusing on short-term project results, rather than concentrating on how to populate the economy with properly educated/trained personnel in a sustained fashion.

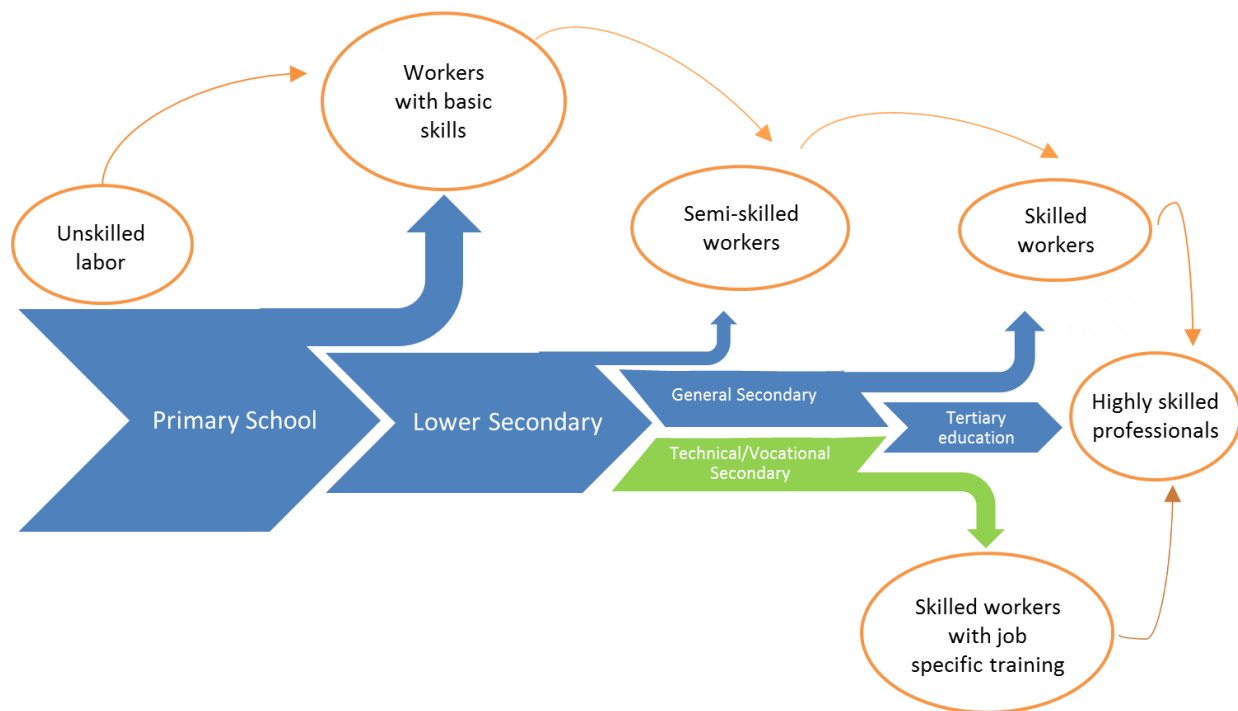


Figure 4: The AET Pipeline

While in theory most of us understand the difference between education and extension; in practice, this distinction tends to fall away given the focus on immediate results. We seem to be lost in a mindset about what constitutes an effective AET program and unable to think about skill development as an institutional issue requiring a long-term, sustainable framework to ensure meaningful results. This first became apparent during the two-day Agrilinks E-Consultation in May 2013. A careful review of the contributions indicates that nearly all participants were talking about extension messages and methodologies that best communicate with farmers, and in particular with women. This is laudable, but not AET. Seeing the target audience for AET

interventions as teachers and administrators was not on the agenda. A call for AET good practice papers recently yielded 9 responses, only 2 of these were AET, another 3 could be said to focus on extension themes.

The AET Dilemma

We are facing two challenges. On one hand, there is an unbalanced institutional culture in the development field that downplays the significance of education (whether publically or privately provided). Education is seen as transferring knowledge created elsewhere. Research is seen as the valued creative act. Learning is not perceived as a creative activity. On the other hand, the institutional context is one in which change is endemic. Actors need to be able to respond to degrading natural resources, climate change, and market volatility, together or in succession. Innovation, adaptive management, and entrepreneurship are needed.

Our findings over the past couple of years echo the sentiments voiced earlier this week: that “we haven’t invested what we should” in agricultural education and this has created “quality issues across the board”. There are serious problems in the AET pipeline that fixing the faucet won’t resolve. Morale and instructional quality are poor. This is largely created when underpaid and under recognized college professors conduct lectures by reading from the notes they took in the same class decades earlier. Despite lip-service to research, scientific methods of observation and hypothesis testing are ignored. Problem-solving skills and critical thinking are largely absent. The tradition of memorization is profoundly engrained.

Although experiential learning is valued and emphasized by faculty and administrators, implementation is perceived as requiring mass transportation or expensive physical inputs, rather than creatively using the materials at hand for learning. There is a lack of incentives for quality (student-oriented) instruction. Syllabi are not used to structure learning and consequently there is a lack of coherence between learning objectives, pedagogical practices, and assessment. This all suggests that even minimal rewards may help to re-vitalize these efforts. Perhaps improvement could be as simple as instituting Teacher of the Year Awards providing recognition and encouragement for faculty who engage students in active learning processes.

Changes in the Underlying Paradigm

There has been considerable change in the approach to science and development in recent years as the problems we face take on the character of complex adaptive systems. Single solutions don’t often apply and when they do the context often evolves so that new challenges arise. In the early 20th century, Quantum Theory taught us that (instead of being the objective observers of the universe) we are participants along with the objects of our observation. It is only now that the implications for the applied sciences are becoming apparent.

The underlying paradigm for agricultural development has shifted and we are learning to adapt. Where knowledge was once seen as externally derived we are coming to appreciate the value of local knowledge and using those insights to help foster technological change in agriculture. Research is not simply something that others do apart from the world we live in. Science and learning-by-doing are compatible. Knowledge and action are simultaneous, although measurement of results in dynamic local contexts is still seen as problematic. We must all learn adaptive management.

But what does this mean for agricultural education and training? How does adaptive management change agricultural education and training? What is the role of learning in the process of innovation? Is learning a matter of information transfer resulting in adoption of innovations? Or, is learning a matter of developing capacities for on-going adaptation? Whose capacities should be developed? Where does innovation occur?

The old paradigm focused on knowledge as something that was produced by research, conveyed by extension and implemented by farmers. We've expanded the playing field enormously over the years as we recognized the importance of more and more players along and in support of the value chains. But it is not enough to be inclusive, we need to re-think the way we approach knowledge and the actors who must apply it in their production systems. The new circumstances demand that we populate this agricultural innovation system (AIS) with active learners that are prepared to adapt as the climate or market changes – that have the confidence to be creative leaders, whether in the field, on the production line, or during community or business meetings. Innovation platforms must be developed at the local level.

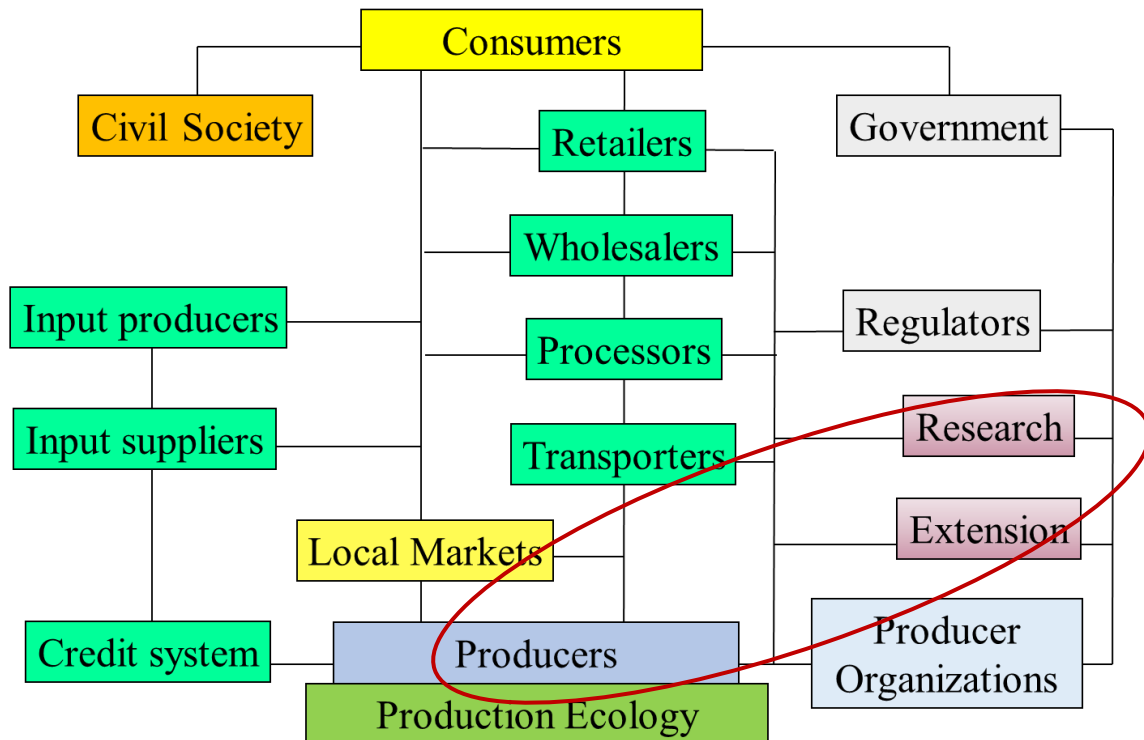


Figure 5: An Agricultural Innovation System (AIS)

This brings us back to the role of universities and training institutions in agricultural education for extension. How do we promote adaptive learning and release that creativity? Traditional extension agents have been trained as subject matter specialists, rather than as skilled facilitators, negotiators, linguists and translators. However, to catalyze the process of innovation we'll need a new type of agent: an innovation broker. These brokers may be individuals or organizations with a neutral role in the system who fosters collaboration and social learning. Innovation brokers are

needed with the skills to analyze specific contexts and articulate local demand, translating local needs into research and policy tools, and facilitate interaction between organizations. They need strong listening skills to mediate and coordinate the activities of a wide range of stakeholders. This role is challenged by our current methods of formal education and training which reinforces linear approaches.

Questions moving forward

- Who is the audience for this message?
- Should we focus on ministries of education?
- Should we focus on private sector schools and training institutes?
- Is the donor community the key target for our messages?
- How does one target changes in organizational culture?

Perhaps some of the most challenging questions revolve around how local systems are held accountable for their own development.

- How does one assess capacity development for agricultural innovation systems?
- How can we measure changes in organizational culture?

Let me close with this quote from Vernon Ruttan (author of *Induced Innovation*) in 1991 at a Seminar on African Development that speaks to the seriousness of these questions:

“The thing that bothers me is that the donors have consistently tried to avoid the issue of institution-building in Africa. In South and Southeast Asia in the 1950s, the donors were building the institutional capacity it took to create the growth that began in the 1960s. In the 1970s, we didn’t do it in Africa because we were on the basic needs and rural development kick. An agronomist was viewed as doing elite stuff. A plant breeder was even more elite. I think it’s time that the donors begin to take the issue of institution-building seriously or in 2010 we are going to be having this same conversation.”

Post Script

I should note that a few USAID Missions have recently made major institutional investments in AET. They call them ‘feel good’ projects because the individuals involved know they are the right thing to do, but they are not able to rationalize them on the basis of currently accepted accountability standards. These projects (e.g., ERA/Senegal, iAGRI/Tanzania, EHED/Liberia, RHEA/South Sudan, etc) and several others demonstrate that there is a legitimate reason to pursue these efforts. The innovATE Project will be investigating these projects and other similar projects over the course of the next year. We encourage you to send us contact information for well-informed and articulate implementers whom we can convene to develop a set of lessons learned (both tacit and explicit).

Reference:

Swanepoel, F., Ofir, Z., and Stroebel, A. (eds.) 2014. *Towards Impact and Resilience: Transformative Change in and through Agricultural Education and Training in Sub-Saharan Africa*. Cambridge Scholars, Newcastle-Upon-Tyne, UK.