

## Designing Agricultural Education Systems that Promote and Prepare Entrepreneurs

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### Abstract

*This paper discusses three aspects of post-secondary agricultural education and training (PSAET). The first includes definitions and the differences between the inherent characteristics of being an entrepreneur versus the particular skills that people can acquire in entrepreneurial training. The paper also discusses individual versus organizational or institutional skills, and the fact that PSAET institutions can be entrepreneurial in various ways, including the search for additional funds for development and fee-based access to intellectual activities and access to new programs. The second part of the paper reviews three PSAET leadership and professional challenges. PSAET institutions are confronting a number of challenges over and above the "obvious array," in government policy and funding, governance, capacity building, curriculum development, institutional linkages, and physical infrastructure, equipment and technology. The final aspect is an alternative way of envisioning post-secondary agricultural education and training, one that aims to promote connections with components of workforce development and the promotion of academic and entrepreneurial skills among students and other post-secondary education program participants.*

**Key words:** *Post-secondary agricultural education, training, Africa*

## Introduction and Background

Improving agricultural performance is vital to overall economic growth in Africa (NEPAD, 2001). Education is strongly linked to agricultural growth. Education is crucial, whether it be for agricultural researchers conducting experiments, extension agents promoting new technologies, or farmers who want to upgrade their skills. In a study on government spending, growth, and poverty, education was shown to have the third largest impact on poverty reduction in India (Fan, Hazell, and Thorat, 1999).

However, education (both formal and nonformal) is limited in sub-Saharan Africa (SSA). Where post-secondary agricultural education and training (PSAET) is available, it is usually at the formal level and focuses on theoretical rather than practical aspects or even basic skills. In Mozambique, a study on human capacity found that the agricultural sector is characterized by a lack of basic skills (Skelton, Fraser, Freire, and Laos, 2003). Training in entrepreneurial skills is largely lacking.

There has been a move in thinking vis-à-vis agricultural education from employment-oriented vocational training, to basic entrepreneurial skills development, which would enable people to create their own jobs (Grunwald, Nell, and Shapiro, 2004; Skelton, Fraser, Freire, and Laos, 2003). However, there is no framework or consensus on how this can come about to bring positive change for Africa.

## Purpose and Objectives

This paper aims to (a) discuss definitions of entrepreneurs and the difference in inherent characteristics and those skills that can be learned; (b) examine the challenges inherent in PSAET; and (c) to present a “workforce education system” framework that highlights links between various arenas of agricultural knowledge generation, exchange, and development.

## Methods and Data Sources

The present study is based on (a) case studies from eight countries providing data obtained through structured and semi-structured interviews with key informants in the PSAET and related fields, (b) three mission appraisals, and (c) review of relevant literature regarding post-secondary agricultural education and training.

## Results

### *Entrepreneurs and “Entrepreneurial”*

“Entrepreneurs add great value to communities by forming new firms” (Henderson, 2002:45). In a word entrepreneurship is about starting new business. Henderson states, “At the community level, entrepreneurs create new jobs, increase local incomes and wealth, and connect the community to the larger, global economy” (2002:46).

Agriculture requires initiative, but in many cases aversion to risk is a common feature among agricultural producers. Initiative is part of the entrepreneurial streak. It marks the person who already has it, and changes the person who learns it.

Educators such as McClelland and Armstrong developed training courses in the 1970s to promote “ach M,” or “achievement motivation,” and demonstrated its cross-cultural aspects through offering the course in many different countries and also for the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Industrial Development Organization (UNIDO). Teaching entrepreneurship and business acumen are central to a curriculum that seeks to promote agricultural development as the final impact of

sharing knowledge and skills with students or other participants in such a course. Entrepreneurs as well as those studying to be entrepreneurs need skills along with commitment to taking risks for gain.

The Overseas Cooperative Development Council (OCDC) seeks to promote an entrepreneurial climate and support for those producers and emerging farmers who want to know more about the local or other markets. This type of Council represents a nonformal educational program which seeks, among other things, to promote marketing skills. According to the OCDC, marketing skills are especially needed to promote (a) group management skills, (b) internal savings and lending skills, (c) innovation and experimentation skills, (d) basic market skills, and (e) sustainable production skills, including natural resource management skills (OCDC, 2007). These skills would appear to be needed to be taught in formal higher agricultural education curricula.

We know how to motivate. We know marketing skills are needed to organize and prepare farmers to be linked to markets. But studies indicate that higher agricultural education institutions need to adopt innovative institutional systems that incentivize faculty to develop new curriculum (Johanson & Saint, 2007).

People whose background or inclination has prepared them to take the risk of a business to earn a living have the characteristic or “natural” inclination toward entrepreneurialism. However, it can also be taught. Training in entrepreneurial skills and attitudes is a set of business algorithms that can be learned, such as in accounting, business planning, extension communications, markets and their current situation and history, marketing skills, and so forth. Entrepreneurs often have little or no school training; they just gravitate toward being intellectually assertive and willing to take risks for gain. Training interested individuals in the skills used by and associated with entrepreneurs is a way of promoting the development of entrepreneurs and people with entrepreneurial skills in society.

Entrepreneurs may participate in such educational programs, perhaps in collaboration with faculty responsible for training in entrepreneurial skills. In such cases the agricultural university or college would seek out and find ways of working with other business and field activities involving education at the higher or workforce level. This suggestion will be further discussed below after a brief discussion of entrepreneurship and motivation at the individual/group level. Entrepreneurship at the institutional level is a related matter, and highlights the importance of leadership in setting the climate of an organization. Leadership (also discussed below) contributes to the atmosphere, the organizational climate in which people choose how they want to succeed and whether they see the value of succeeding. Leadership also determines how PSAET universities, schools and institutes will meet the organizational learning and curriculum turnovers being required to enter the 21<sup>st</sup> century.

Entrepreneurial training will not necessarily turn a country around economically, nor does it guarantee a career or position. It essentially teaches business skills and attitudes, and makes one more prepared to take on business challenges if they arise. Indeed, agricultural education program administrators and faculty might benefit from a closer relationship with other schools in agricultural higher education, especially those involved in business and economics, but also other areas related to agriculture such as health and eco-agriculture<sup>3</sup>. In Uganda, the

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<sup>3</sup>A term created in 2001 by Jeffrey A. McNeely and Sara J. Scherr. The term refers to “landscapes that achieve the joint objectives of sustainable production, biodiversity and ecosystem conservation, and rural livelihoods (McNeely and Scherr, 2001).

Private Sector Foundation (which includes in its roster more than 70 associate member organizations—of which a dozen or so are export-oriented agricultural associations) has a connection with Makerere University's business and economic schools but not with the agriculture college. What are the business and economics schools doing that the agricultural college is not? And how can this situation be altered? The (leadership) politics of an organization sets the climate, according to Heaver (1982).

Entrepreneurship is a challenge to the higher agricultural education institutions. One question is how to accommodate the increasing numbers of potential students who want to enter a post-secondary educational institution. To accommodate them what can existing university colleges and training institutes do to open their doors without dropping their standards? The potential of distance education and information and communication technologies (ICTs) in general is already being pursued in SSA but distance education, its potential and its problems, which latter may be solved by periodic interviews and testing of distance-ed students on the material assigned to date. Entrepreneurship is not only an individual characteristic, but an organizational one as well.

#### *PSAET: Capacity and Challenges*

Aside from the many challenges mentioned above that confront PSAET systems, two sets of concerns are crucial to the advancement of these systems: leadership challenges and challenges related to professional issues confronting PSAET institutions.

Leadership is needed that encourages and facilitates faculty in fostering scientific advancement, practical preparation of students, and in promoting continuing education. Two tasks for education leaders at the post-secondary level, other than administrative and strategic, are (a) to periodically focus on, and connect to, the larger government and business system (lobbying techniques could be useful in dealing with government) and (b) to periodically focus on, and connect to, the various institutions involved in post-secondary agricultural education – whether formal, nonformal or inservice administration and upgrading training.

*Leadership and academic challenges.* Post-secondary agricultural education and training institutions in SSA face many challenges, including those related to policy and funding and system governance; as well as human capacity development, curriculum development, and institutional linkages; not to mention physical infrastructure, equipment and communications technology (Rivera, 2006; Davis, Ekboir, Mekasha, Ochieng, Spielman, and Zerfu, in press). Equally important is the issue of organizational cultures, behaviors and incentives (Davis et al., in press). Four internal university challenges appear major.

- The first challenge to higher agricultural education is *leadership and institutional development*. In some cases a clear, meaningful and realizable strategic plan of action for five to ten years is one means of starting.

The three academic challenges are reasonably well known:

- One academic challenge is *to advance the dual needs for science education and agricultural demand-driven university research* (Alex & Byerlee 1999; Bateman 2005; Byerlee & Pehu, 2005; Eicher, 2004; Lynam & Blackie, 1994; Sawyer, 2002; Michelsen & Hartwich 2004; World Bank, 2004; World Bank, 2000).

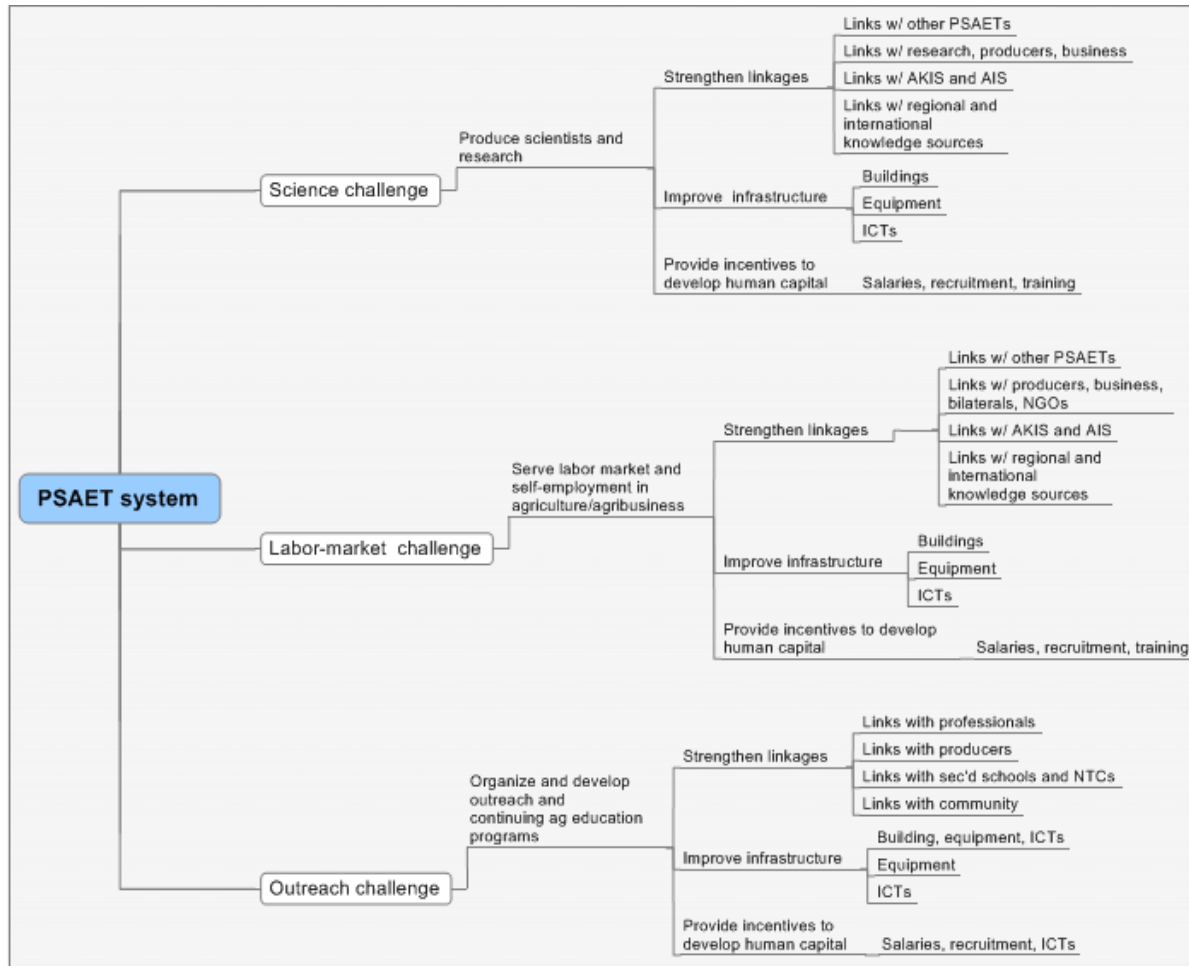
- Another academic challenge is *to produce competent graduate students to take up available positions in the agricultural labor market* while pursuing entrepreneurial ventures in agricultural business (Atchoarena & Gasperini 2003; Byerlee & Pehu, 2005; Dione, 1997; Klawe & Whitney 2003; Saint, 2005; World Bank, 2002).
- The last academic challenge is *to catalyze higher education institutions to foster national extension-type services and community development by upgrading the skills of producers, professionals and communities* (Nindi, 1993; Bawden, 1996; Crowder & Anderson 1996; Wallace, 1997; Crowder, Lindley, Bruening, & Doron, 1998; Zinnah, Steel, & Mattocks, 1998; Rivera, 1998; World Bank, 1999; Binswanger, 2006).

These challenges emerge as major goals for higher education institutions in general but have particular meaning to universities, an issue that was continually brought up during interviews in the missions carried out in connection with earlier reports (Rivera, 2006). This underlines the fact that higher education institutions in SSA face traditional as well as new challenges. The three academic challenges, illustrated in the form of a concept map in Figure 1, constitute a basic framework for analyzing agricultural higher education systems.

*Leadership and strategic planning.* Running agricultural higher education institutions demands leadership at every level, from the institution's presidential and provost levels to deans, faculty and students. Leadership creates the institution's internal "climate" and affects the politics and production of the organization (Heaver, 1982).

Before all else, agricultural higher education administrators need to develop a process of participatory strategic planning; for this, coordinated leadership is required. The process includes all who define the university, that is, the university presidents, provosts, deans of the university colleges and support units, faculty, and leaders within the student body. Three directions are paramount: (a) the development of lobbying techniques at the upper echelon in particular to generate supportive political will, (b) the development of networks and associations that champion the cause of agriculture and the university, and (c) the periodic review and development of a strategic plan involving a democratic strategic planning process involving the leadership cadre just mentioned.

Strategic outcomes and objectives need to be clarified through a strategic planning process that lays the foundation for promoting excellence, relevance and collaborative partnerships with the greater community by the university system as a whole and by individual university institutions in particular. General and particular purposes need to be clarified along with "reachable" goals; connections initiated; funding foundations created where possible; strong and continuing connections to international and non-government organizations concerned with university activities; linkages maintained with businesses and relevant public sectors in the cities and communities; and relationships developed with primary and secondary agricultural schools and programs. Such a process would presumably aid in the development of lobbying practices and techniques, and promote networks and associations ready to champion the cause of agriculture and the development of agricultural business and industry.



Source: Rivera, 2006

Figure 1. Higher agricultural education system agenda and challenges.

*The science commitment.* The science-based knowledge challenge to higher education institutions in SSA is to produce agricultural scientists, research and researchers. This challenge requires improved access, participation and achievement for students directed toward academic specialization and research, as well as for those students whose aspirations are to take on professional technical responsibilities in the work environment. The challenge requires modern curriculum development, research collaboration through competitive and other types of grants, the promotion of science and technology through modern sources of information, and demand-oriented research<sup>4</sup> aimed at contributing to agricultural and rural development.

Drawing on Johanson and Saint (2007) and mission reports from Uganda, Ghana, and Senegal, it seems clear that:

1. Development partners need to be persuaded to *fund essential university operational and equipment maintenance costs*. This is part and parcel of the institutional infrastructure, currently in disarray.

<sup>4</sup> The main principles for demand-oriented research are that it be driven by user demand and accountable to users. Success indicators would be that farmers use the research and gain greater income as result of use.

2. Programs need to *accelerate what is already in progress*. Various programs are being undertaken by higher education institutions in SSA; they include (a) modernizing curricula, (b) promoting faculty exchange, and (c) increasing “sandwich programs” that prepare PhD students for university academic and administrative tasks.

Higher education institutions might also benefit from (a) assessing the viability of providing “hybrid” education involving a combination of face-to-face and distance education at first to professionals in the work arena, (b) on the basis of a positive assessment in the first, fostering academic and extension distance learning activities based on fee-charges and calculation of initial purchase of software and technology and, given a positive assessment, and (c) providing faculty and staff instructional development workshops both in creating appropriate distance education courses and becoming competent in the use of distance education techniques. Distance education programs would then be developed depending on the findings of the original assessment as regards fee-based costs to agricultural business employers.

*The labor market.* The labor market challenge is to produce qualified students for the agricultural jobs, whether in public administration or private business, including producer associations. The labor market challenge is continually emphasized in country case studies and also in the current literature (Klawe & Whitney 2003; Saint, 2005; World Bank, 2002). This challenge is the result of inflexible, outdated curricula and traditional teaching methods, lack of practical projects, and a shortage of work-study programs. Some universities are introducing new courses into agricultural curricula, and these are the leaders in the field. However, courses that balance theory with practice appear to be rare.

Partnerships can be key to success in promoting educational activities to meet labor market requirements. For example, businesses may partner with universities, agricultural colleges and vocational institutions to provide internships. This could aid students in gaining practical skills. Businesses would thus acquire inexpensive workers that they can train and possibly retain after the degree/certificate is earned, plus the education institution gains in reputation, which may in turn help recruit better students.

Universities have an important role in developing and implementing education programs that prepare students for existing job and career opportunities. Some of these tasks include:

1. Enhancing collaboration with agricultural business and the private sector in general, as well as the public-sector administrations dedicated to the variety of agricultural concerns (not just crops and livestock, but forestry, fisheries and the task of organizing and linking farmers to markets).
2. Conducting labor market studies and establishing a labor market monitoring capacity.
3. Working to make the agricultural professions attractive employment and career options, while recruiting many more women into this field.

In general, as in the agricultural science programs, curricula and pedagogy need to be modernized and innovations adopted, such as fostering the creation of business and entrepreneurial plans by students.

In addition, universities need employment placement offices that serve as career centers with an executive director and assistants dedicated to developing academic and outreach programs, student employment, student support services, experiential learning programs, and college and business liaison. Placement services would maintain employer inquiries (listing positions for full-time, part-time, temporary, internship, cooperative education opportunities, etc.), internship programs for credit and student employment training programs. It would also play a significant role in promoting what is termed herein ‘workforce education systems.’

*Outreach and extension.* The outreach challenge is directed toward provision of national outreach services via continuing education programs and short-term courses to meet the needs of professionals, as well as extension-type and community services for producers who are underserved or fall within the category of Millennium Development Goals. This is one way to implement development, according to Crowder et al. (1998).

Outreach programs can provide follow-up technical support to graduates working in agribusinesses or managing their own production enterprises. Short courses of continuing education can be designed to update extension officers’ knowledge and to qualify extension staff for career advancement (Crowder et al., 1998).

In some cases, outreach programs might seek to engage secondary school teachers and students in seminars on modern developments in agriculture and the life sciences, or reach out to out-of-school youth to interest them in practical training programs. Also, women’s agricultural education and skills deserve program attention. There is a clear bias against women employees in agriculture, extension and workplace training (Payne et al., 1993; Rivera & Corning, 1989). This might be an opportunity for higher education institutions to make up for this disparity, as Uganda is doing with its Female Scholarship Initiative.

Reaching out to communities can also benefit students. Community service projects, business plans, or anything that post-secondary students might want to “practice” in action research projects can benefit a local community. This practice can help rural students maintain a connection with their roots and also allow for urban youth to develop more understanding of rural life. [Urban students studying agriculture usually have a steeper learning curve that they seldom climb because of their lack of practical experience in agriculture.]

Partnerships with secondary schools can benefit younger students, possibly encouraging them to pursue further education in an agricultural area and proving to them that there are opportunities in agriculture within SSA. Outreach programs can also benefit farmers by helping them gain access to valuable information and knowledge about innovations at low/no cost, possibly by organizing and developing an agreement with outreach personnel.

The universities have an important role in continuing and outreach education programs. These programs are an opportunity for the universities to teach and inform agricultural professionals and producers about technical and marketing innovations. Marketing skills such as the following indicate the variety of skills needed for development: (a) group management skills, (b) internal savings and lending skills, (c) innovation and experimentation skills, (d) basic market skills, and (e) sustainable production skills, including natural resource management skills (OCDC, 2007). These skills are useful for regular as well as outreach students.

#### *An alternative view of Post-Secondary Agricultural Education*

Not all governments will respond in like manner to the constraints and problems of their higher education arrangements. But in general they will usually adopt one of three approaches.

Some may seek simply to *improve* the higher education institutions by small or targeted interventions. Others may be moved to *reform* higher education systems via measures that include decentralization, institutional autonomy, governance pluralism and demand-oriented programs. Still others may desire more sweeping changes aimed at system *transformation*. To this end, they may decide to explore the development of a workforce-inclusive system proposed and illustrated in Figure 1.

The “workforce development” system in Figure 2 presents a broad view of post-secondary agricultural education and training. It is *not* intended to suggest equivalency of education expertise or quality, nor comparable purposes or type of education. But it *is* intended to highlight the connections that might be, and in the authors’ view should be, forged by the higher education institutions in exposing students to the various arenas of agricultural knowledge generation, exchange and development.

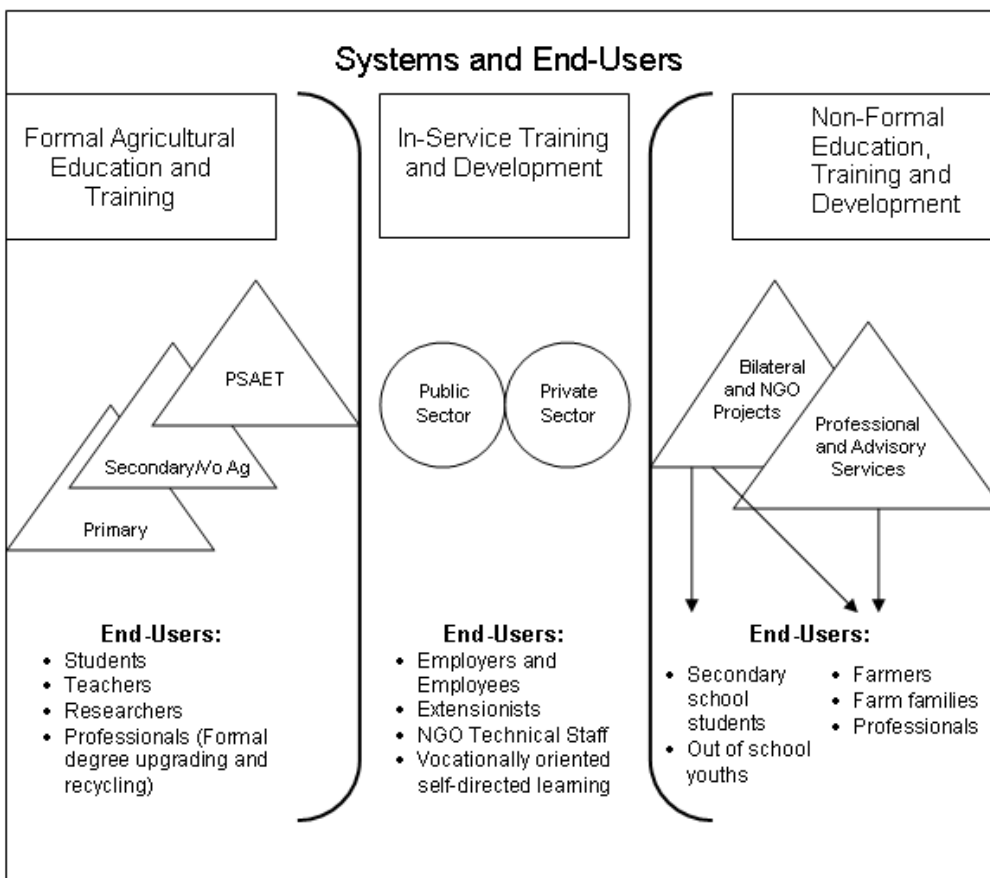
This “workforce” view of agricultural education and training is intended to expand the concept and practices of higher education systems. Figure 2 outlines the basics of a “workforce education system” in which agricultural and agriculturally-related education is directed toward human capital development within the agricultural workforce, including research workers, for the purposes of agricultural development. The “workforce” in this case includes teachers and students engaged in agricultural study and outreach; public and private directors; administrators and delivery personnel already employed; and also agricultural producers and professionals.

*The workforce alternative* addresses institutional and structural shortcomings in the existing system. It would require governments to assemble higher education stakeholders at the national and local levels to determine (a) the degree of decentralization (whether administrative deconcentration, fiscal decentralization, or devolution), (b) the extent of privatization (especially outsourcing services better implemented by the private sector), and/or (c) demand-oriented processes to be instituted. This would also require a commitment to ensuring appropriate and effective governance mechanisms that bring representatives of all of the key stakeholders to the decision-making table. The literature suggests that such reforms are debatable as to their performance and outcome (Rivera, in press). Nevertheless, they provide an agenda for consideration.

### **Questions and Conclusions**

Are the current systems of agricultural higher education, training institutes and colleges, and business development training (human resource development or HRD) programs and other post-secondary educational opportunities being provided to meet workforce needs? Where are post-secondary education activities most needed? Is it in youth development, continuing education, apprenticeship, higher agricultural business acumen, becoming an entrepreneur? Answers to the questions above are required.

What will government and investment donors see if they look across the several educational systems engaged in supplying their country’s post-secondary education needs? These are some of the questions to ask in designing systems to promote and prepare entrepreneurs. The answers to these questions depend on each country’s circumstances as well as the system and reforms already in place.



Source: Adapted from Rivera, 1995

Figure 2. Elements of an agricultural “Workforce Education System.”

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