AGRICULTURAL & RURAL DEVELOPMENT
NOTES

Cultivating Knowledge and Skills to Grow African Agriculture

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REVISITING AGRICULTURAL EDUCATION AND TRAINING (AET) IN AFRICA

Africa is unlikely to register significant developmental advances until she learns to grow her agriculture. Recognizing this reality, African governments adopted a *Comprehensive Africa Agriculture Development Program* (CAADP) under the auspices of the New Partnership for African Development (NEPAD) in 2002. This Program states that larger investments in agricultural research, extension, and education systems are required to achieve the targeted increase in agricultural output of 6 percent a year over the next 20 years. In 2006, NEPAD issued a Framework for *African Agricultural Productivity* (FAAP) as a guideline to member states for attaining this production goal. These and other recent international initiatives (e.g., Commission for Africa Report, World Bank Africa Action Plan) have brought both agriculture and technically focused education back into the work plans and budgets of African governments and development assistance agencies alike. This provides hope that the neglect of agriculture in Africa may now be a thing of the past. However, although these initiatives frequently recognize the general importance of AET, they offer little specificity on what should be done or how to do it. To this end, the World Bank initiated a series of studies on AET in 2005. This Note synthesizes the findings of this research and proposes a set of strategic measures for strengthening the contribution of AET to agricultural productivity in Sub-Saharan Africa (SSA). The target audiences are African practitioners and policymakers concerned with boosting food supply and agricultural output, donor representatives, and World Bank staff.

World Bank President Zoellick's Perspective on the Importance of Revitalizing Agriculture in Africa

Some 70% of Africa's poor live in rural areas, and nearly all of them are involved in agriculture. The recently-released World Development Report 2008 shows that for people living on $1 a day, growth in the agricultural sector is four times more effective in overcoming poverty than growth in other sectors. So investing in agriculture offers an attractive opportunity to strengthen Africa's economies as a whole, while addressing poverty. A recent independent evaluation report of the World Bank's work reveals that we have some challenges and although we've improved some of our work over the past couple of years, there is also an opportunity for us to do much better.

Source: Robert B. Zoellick 2007.

WHY HAS AFRICAN FORMAL AET BEEN NEGLECTED?

For more than a decade, formal AET has been largely abandoned by governments and donors in Africa. This might seem surprising in view of the agricultural sector's sizeable contributions to the gross domestic product (GDP), employment, and exports in Sub-Saharan Africa. As explained in the box below, multiple factors have combined to bring AET into its present *orphaned* state.

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African Professionals have been Distanced from AET Knowledge Networks

The initial institution building achievements of the 1970s and 80s have given way to neglect since the 1990s. Donor assistance to African agriculture has declined sharply and, within that total, support for AET in Africa has largely disappeared. Assistance for *formal* AET declined to just 0.7 percent of agricultural sector aid between 2000 and 2004. Government funding has tended to follow donor priorities. The ultimate cost of the government and donor pull back from AET has been to distance African professionals from knowledge networks, global information resources, and the cutting edge of technology transfer. This has left a severely depleted human resource pool in African agriculture

Source: World Bank 2007.

MAKING THE BUSINESS CASE FOR AET IN AFRICAN DEVELOPMENT

Agriculture continues to be Sub-Saharan Africa's dominant economic activity, accounting for 40 percent of GDP, 15 percent of exports, and 60-to-80 percent of employment. Higher agricultural productivity is a precondition for growth and development in most African countries, and increasing yields is the key to raising incomes in rural areas. Farmers and commercial producers may benefit especially if they can diversify their production into higher value, and often knowledge-demanding, specialized crops. Strong AET systems are necessary to underpin such gains in productivity. AET directly raises agricultural productivity by developing producer capacities and indirectly increases agricultural productivity by generating human capital for support services. Investments in AET clearly enable research, extension and commercial agriculture to generate higher payoffs. As stated by NEPAD, "The quality of tertiary agricultural education is critical because it determines the expertise and competencies of scientists, professionals, technicians, teachers and civil servants and business leaders in all aspects of agriculture and related industries." Higher agricultural education also contributes directly to research and advisory services. Extensive institutional infrastructure for AET has been put in place since the 1960s. Africa now has roughly 200 public universities (compared with 20 in 1960) and about a hundred of them teach agriculture and natural resource management. In addition, private universities are beginning to complement these capacities with their own offerings.

To enhance the quality and productivity of AET in Africa, the case for improving its agricultural education capacities is compelling in view of their seminal role in agricultural development elsewhere in the world. AET development was an integral part of strategies of countries that grew agriculture successfully, such as Brazil, India, and Malaysia. Given an enabling environment, African AET should be able to produce the same impact.

KEY MESSAGES TO SUPPORT INVESTMENTS IN AET

This section sums up the case for increased investment in AET and synthesizes issues in the sub-sector. The key messages include the following:

Recent Agricultural Reform Experiences: Lessons emerging from recent agricultural reforms demonstrate that a more nuanced understanding is needed of AET's role in promoting innovation, productivity gains, and growth in agriculture. Insight is specifically needed to bring AET into closer and more productive relationships with other actors in the agricultural sector and wider economy. The goal is to share in the comparative advantages of different actors and institutions to reduce transaction costs, achieve economies of scale, exploit complementarities, and realize synergies in innovation.

Guidance from Global Experience on AET: Global experience shows that it is possible to build productive and financially sustainable AET and research systems. Developing countries, such as India, Malaysia, Brazil, Chile, and the Philippines, have achieved notable successes in establishing productive AET systems. A review of these and other experiences points to the importance of the following six factors:

(1) Mobilizing and sustaining political support for AET investments is simultaneously the most important and most difficult issue to address in designing and financing a system of agricultural development institutions.
(2) Public investment in capacity building has been essential for creating the scientific leadership necessary to implement each country's strategy for agricultural development.
(3) Building a system of core AET institutions is a process of capacity accumulation that takes sustained commitment over multiple generations to produce returns.
(4) The administrative separation of research and higher education in many African countries cripples the development of national agricultural innovation systems.
(5) Massive campaigns to develop human capital have worked in other countries.

Agricultural Sector Investments are on the Increase, but AET in Africa is a Multi-Sectoral Issue That Could Often Fall Through the Cracks

The Bank's Africa Action Plan is generating visible results, as World Bank investments in Africa's agricultural sector doubled in 2006 and remained strong in 2007. Other donors have responded similarly. Notably, African governments have committed themselves to investing 10 percent of GDP into their agricultural sector by 2010. Human resource development features prominently in all of these initiatives, with agricultural education and training a potential beneficiary from this. Yet following so many years of neglect, priorities for interventions in the AET sub-sector are not at all clear. Agricultural education is a multi-sectoral issue that does not fall neatly into either the education or the agricultural sector. As a result, it may often "fall through the cracks" between the mainline sector programs. In the meantime, under financing of Africa's agriculture sector appears poised to change. Recent signs may signal an encouraging turnaround in donor assistance to agriculture and to agriculture training, including the Commission for Africa Report, *Our Common Interest*, several donor initiatives focusing on skills development for agriculture, the 2003 Maputo Declaration by NEPAD, and the Framework for African Agricultural Productivity issued by NEPAD and the African Union in 2006. If additional investment in AET materializes, the key question is *how should these additional funds be used?* Multi-sector teams and cross-sector collaboration are, therefore, necessary to insure balanced attention to both the human development and agricultural knowledge aspects of AET.

Source: World Bank 2007.

(6) Finally, incentives are necessary to retain staff in research, extension, and education.

Constraints on Building African AET Capacity: AET supply is often out of synch with labor market demands in terms of knowledge and practical competencies, especially agribusiness, business and program management, and problem-solving skills. AET is not realizing its potential contribution to agricultural development because of poor linkages with research and isolation from knowledge sources. External problems, such as fragmented organizational responsibilities for AET, and internal problems in terms of under-funding, unattractive working conditions and consequent staff depletion, contribute to AET underachievement.

Constraints include the following:

(1) AET enrollment profiles are distorted and declining;
(2) AET institutions tend to be isolated and fragmented;
(3) AET curricula tend to be obsolete and disassociated from the competitive economy;
(4) Numerous African countries face crises in AET staffing; and
(5) Teaching methods and facilities are often inadequate.

Bringing African AET into a More Productive Relationship with Other Economic Actors: The agricultural innovation systems (AIS) framework is seen capable of contributing fresh perspectives on how to make AET more productive. An AIS is a blending of institutional capacities, coordination mechanisms, communication networks, and policy incentives, that fosters innovation-led gains in agricultural productivity. It emphasizes the need to understand key actors and their roles, their behaviors and practices, and the institutional context within which they interact, all of which are key conceptual elements in innovation systems analysis (World Bank 2006).1 This in turn points to issues of institutional structures of governance and management (for greater flexibility and responsiveness), criteria and incentives for professional performance (for improved productivity), access to information and inter-institutional communication networks (for enhanced competitiveness). All of these issues are relevant to AET institutions.

The Time to Act is Now: AET is a vital, but much neglected, component of agricultural development in Africa. Continuing neglect of AET risks limiting agricultural recovery and restricting the possibilities for economic growth and poverty reduction. Consequently, countries in Sub-Saharan Africa are urged to address the shortcomings of current approaches to human capital formation in agriculture by training a new generation of agricultural professionals with different skill sets. This goal is not amenable to a quick fix. Long-term patient support, over twenty years or more, will be needed from government, AET institutions, and development partners to attain this objective.

Gender Integration in AET is Disproportionately Affected

The ultimate decline in AET funding in Africa has left a severely depleted human resource pool in African agriculture. The low number of women among this human resource pool is especially alarming. Meanwhile, women play multiple roles in agriculture and account for more than half of agricultural output in SSA. But they have continuously received a less-than-proportionate share of investment in agriculture. For example, women farmers receive only 5% percent share of extension services, while it has been shown that farm productivity is significantly (22%) increased when women receive the same advisory services as men.

Source: Udry et al. 1995.

RECOMMENDATIONS AND OPTIONS FOR POLICIES AND INTERVENTIONS FOR AFRICAN AET

The analytical work carried out on AET in Africa identified seven priorities as key to modernize agricultural education in Africa. These priorities are:

(1) Political will must be generated in support of agricultural development by educating the public about its role in economic growth and poverty reduction, creating capacities for lobbying, joining forces with other stakeholders, and sustaining these efforts over two or three decades.

(2) AET institutions should be integrated into the national agricultural innovation system (NAIS) by establishing better institutional and market linkages. Associated AET reforms ought to be grounded in an analysis of agricultural priorities and market requirements, and to recognize that changes in organization and management can provide opportunities and incentives for productive external linkages. Access to international knowledge sources is becoming increasingly easy, but it often requires external assistance.

(3) It is desirable to assess and re-balance AET enrollment profiles away from secondary level vocational training towards diploma, degree, and post-graduate levels.

(4) Curricula and pedagogy should be modernized by emphasizing analytical skills, problem-solving, agribusiness processes, and post-harvest technologies and "soft" but essential skills such as communication and teamwork. Student interest in agriculture could be sparked by recasting programs in more modern and appealing terms, such as applied sciences and technology, and by educating the public on the full range of agricultural career possibilities.

(5) It is essential to replenish human capital by strengthening and expanding national Master of Science programs, laying the foundation for Ph.D. programs, and tackling the conundrum of incentives for staff retention.

(6) Finances must be managed proactively by making more efficient use of existing resources, mobilizing non-public resources, and persuading donors to finance operating costs.

(7) Much better gender balance must be achieved among AET graduates.

CONCLUSION

African universities and other institutions of higher learning ultimately will be responsible for replenishing the stock of human capital in national research and extension services, and for providing them with the broader set of skills necessary to grow agriculture in the 21st century. However, they are ill prepared at present to train the continent's next generation of agricultural scientists, professionals, and technicians. As stated by NEPAD in the Framework for African Agricultural Productivity *"…urgent action must be taken to restore the quality of graduate and postgraduate agricultural education in Africa."*

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[1] The interrelated importance of education, research and extension in enhancing agricultural production and reducing rural poverty is well recognized in many developing countries. However, evidence suggests that the traditional education-research-extension "triangle" may be increasingly ill-equipped to respond to the new opportunities and challenges now associated with agriculture in Sub-Saharan Africa (Kroma 2003; Tadesse 2003). The entry of new actors, technologies and market forces, when combined with new economic and demographic pressures, suggests the need for more comprehensive approaches to strengthening agricultural education, research and extension (IFPRI 2006).

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