New approaches to strengthening human and institutional capacity for improving rural livelihoods in Africa

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Abstract

All the recent major studies of African rural livelihoods and development have, on the one hand recognised that agricultural development is essential to drive Africa's overall economic and social development and, on the other hand, recognised that Africa is critically short of the innovation capacity to meet its targets for agricultural production. This has focused attention on learning why Africa has lost, not produced or failed to recruit the calibre of innovators it requires and why Africa has not made best use of ICTs and distance learning to empower rural innovators and why its universities are not sufficiently engaged with the other actors in agricultural research and development.

The Forum for Agricultural Research in Africa (FARA) was formed to catalyse, encourage and facilitate partnerships between its members; African and non-African. Extensive consultations have resulted in several innovative cross-continental partnerships that are addressing the issues of agricultural innovation. The Regional Agricultural Information and Learning System (RAILS) is enhancing the flow of information and also enabling actors across the agricultural value chains to interact and learn from each other about the innovations that they are involved in. The success of RAILS will be enhanced by the programme for Strengthening Capacity for Agricultural Research and Development in Africa (SCARDA) is taking a novel holistic approach to strengthening the human and institutional capacities of agricultural organisations and their partners in the value chains. The sustainability of the advances made by SCARDA will be underpinned by the programme for Building Africa's Scientific and Institutional Capacity (BASIC) which is a partnership of African and non-African universities and African based agricultural research institutions. This will enable the universities to produce the calibre and type of graduates and under-graduates that the actors in the value chains require for the world of today and the future.

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INTRODUCTION

Agriculture accounts for 24 percent of Africa's GDP, 70 percent of its employment, and 40 percent of its foreign exchange earnings and is the main generator of savings and tax revenues. In 2000, about 56 percent of Africans (431 million people) depended on it for their total livelihoods. It is dominated by smallholder farming with persistent low productivity. In the face of growing populations, this creates food supply gaps that have to be met by food imports and food aid and of course sadly by reduced consumption by the poor. This is aggravated by increasingly frequent disaster-induced emergencies. In 2001, about 28 million people in Africa were facing food emergencies, of which some 25 million needed both emergency food and agricultural

assistance. The potential for improved smallholder productivity (IFPRI 2002 and 2004) is indicated by per capita growth above 3% that has been achieved over the past decade with per capita agricultural growth above 1%. This is attributed to improved governance, macro-economic stability and better trade and development policies and rising commodity prices (Binswanger-Mkhize and McCalla, 2008). However the growth has been uneven and falls short of the 6% per annum growth in agricultural production required for real sustained relief of extreme poverty and hunger in accordance with the first Millennium Development Goal. That requires 4.4% annual increase in productivity which is much higher than the 1.3% achieved in the 1990s and achieving that will require significant investment in human and institutional capacity in science, technology and institutional innovation (IAC 2004, Commission for Africa 2005, Juma and Serageldin 2007).

Africa is responding to its agricultural development challenges with a new approach articulated in the Comprehensive Africa Agriculture Development Programme (CAADP) which has been endorsed by African Heads of State and Government as a framework for agricultural growth, food and nutrition security, and rural development (NEPAD 2005). CAADP's goals are that by 2015, Africa should:

- Attain food security;
- Improve agricultural productivity to attain a 6 percent annual growth rate;
- Develop dynamic regional and sub-regional agricultural markets;
- Integrate farmers into a market economy; and
- Achieve a more equitable distribution of wealth.

CAADP directs investment to four mutually reinforcing pillars:

- Pillar I: Extending the area under sustainable land management and reliable water control systems;
- Pillar II: Improving rural infrastructure and trade-related capacities for market access;
- Pillar III: Increasing food supply, reducing hunger and improving responses to food emergency crises; and
- Pillar IV: Improving agriculture research, technology dissemination and adoption.

CAADP Pillar IV has four specific themes:

1. Integrated natural resource management
2. Adoptive management of appropriate germplasm
3. Development of sustainable market chains
4. Policies for sustainable agriculture

Capacity strengthening is a universal requirement cutting across all CAADP Pillars and themes. The approach being advocated is to learn and correct why Africa has lost, not produced or failed to recruit the calibre of innovators it requires.

The implementation of CAADP Pillar IV is underpinned by the Framework for African Agricultural Productivity (FAAP) which has been emulated by the other three Pillars (FARA 2006a). The FAAP addresses the challenges of achieving strengthened agricultural knowledge systems delivering profitable and sustainable technologies that will be widely adopted by farmers and result in sustained agricultural growth. Its principal concern is to make agricultural technology generation and dissemination institutions relevant and responsive to the needs of farmer and agri-business. This has been lacking in the past in the orientation of agricultural research and extension services, resulting in disappointing impact from investment in agricultural research, extension and capacity building.

Partnership is the essence of NE**P**AD and Africa's collaborating partners are making vital contributions to CAADP with funding and by providing access to new technologies and critical

expertise. The African Agriculture Technology Foundation (AATF) is expediting exchanges of intellectual property from private for profit to public pro-poor research.

EMPOWERING END USERS

Providing information and advancing learning

Achieving CAADP's targets will depend on the products of formal and informal research being rapidly and geometrically out-scaled locally and up-scaled across the continent. This depends on establishing better advisory services and dissemination channels that are accessible and efficient based on better knowledge of how to get information to those who need it, including the advisory services themselves. Improved linkages are required between different knowledge resources to empower researchers and other actors in the agricultural value chains with information on new markets and technologies. This has to be reinforced with learning and decision-making tools and technology dissemination pathways that will take technologies, whether derived from formal research or farmer innovation, across countries and sub-regions. To achieve this FARA is collaborating with the African Forum for Agricultural Advisory Service (AFAAS) which was established to improve the institutional arrangements of agricultural extension programmes, as this will (i) increase the effectiveness of agricultural advisory services and (ii) build the capacity of African professionals and practitioners involved in designing and implementing such services.

FARA has established a Regional Agricultural Information and Learning System (RAILS) with the goal of developing an African platform for agricultural information and learning that will facilitate synergies by linking African information conduits to global agricultural information providers to improve the access and the contribution of African scientist to agricultural science and development knowledge. Although there are several international initiatives focused on agricultural information systems, still there is decreasing number of scientific publications and participation in systems that are designed to promote African participation (FARA, 2004). Africa still faced with challenges of connectivity, information availability in the right format, cost and quality of information. RAILS will therefore focus on building Africa's capacity to promote equitable access and contribution to knowledge exchange. It adds value to similar subregional and national structures for agricultural information services. Its specific objectives are to provide:

- Coordination, facilitation and coherence of information exchange in Africa
- Advocacy for improved policies and to encourage increased investment in agricultural information systems by African governments and institutions
- Improved access to information and the ability of African stakeholders to contribute to global agricultural knowledge
- Capacity building on ICT/ICM Skills, infrastructure and leadership

The more dispersed the population and the lower the average income the harder it is to meet the capital and operating costs of communications networks. However, Africa is benefiting from a mobile revolution with 60-80% of population now covered by the mobile transmitters (McNamara, 2007) and further infrastructural improvements are advocated by the African Union, the Regional Economic Communities (RECs) and national governments, which will improve the utility of web-based information and use of traditional communications tools.

As a result, Africans are gaining access to world-wide sources of agricultural information and technologies. They are also better able to contribute information from Africa which has been under represented in global agricultural information systems. Examples of such initiatives include

collaboration with the Système d'Information Scientifique et Technique (SIST) and Réseau Biotechnologies Végétales et Biosécurité (BVB).

FARA's website is intended to become a first-choice portal for African agricultural information providing links to other relevant portals and to be a strong communication and public relations tool for FARA stakeholders.

In the partnership spirit of NEPAD, RAILS is committed to catalysing and facilitating learning from experiences elsewhere such as from the Lifelong Learning and Technology-Mediated Open and Distance Education (Tech-MODE) systems pioneered by the Commonwealth of Learning (COL) in India, Bangladesh and Sri Lanka (MAFSU 2006 and Col 2008). The high potential value for Tech-MODE applications in Sub Saharan Africa was brought out in a review of case studies from Cameroon, Ghana, Kenya, Nigeria, Sierra Leone, Tanzania, Uganda and Zambia (Zachman, Alluri and Youdeowei 2007). COL is advancing Tech-MODE as a means of enabling learning from grassroots to policy levels through partnerships with public, private and community-based national, regional, and international institutions and organisations involved in agricultural education, extension, research and development. In sub-Saharan Africa, the Forum for Agricultural Research in Africa (FARA), and international agricultural research centres of the Consultative Group on International Agricultural Research (CGIAR) are COL's key international partners.

Strengthening functioning institutions

In 2005, FARA commissioned an assessment of National Agricultural Research Systems (NARS) in sub-Saharan Africa to identify major areas of weakness and recommend corrective strategies. The study identified human and institutional capacity for designing, implementing and managing scientific research as the most important weakness. This was consistent with other studies including the Commission for Africa (Commission for Africa 2005), the Inter-Academy Council (IAC 2004) and the United Nations Task Force on Hunger (United Nations 2005) which highlighted the urgent need to strengthen Africa's human and institutional capacity for change and innovation, especially in agriculture. It recommended new approaches and innovative initiatives to address these critical capacity deficiencies.

As noted in the recent World Development Report (World Bank 2007), universities provide the next generation of scientists but are 'under-utilised for publicly-supported science'. This has especially serious implications in agriculture-based countries. The SCARDA strategy therefore involves strengthening linkages between national agricultural research institutes and universities. It also facilitates engaging with their core partners across the value chains to ensure that capacity strengthening inputs address the holistic needs of national agricultural innovation systems.

The main lessons learned from SCARDA scoping studied were that:

- Deficiencies in agricultural research management and scientific quality in sub-Saharan Africa identified in the NARS Assessment (2006) and other recent studies were confirmed and priority capacity needs were identified
- The key underlying needs are generic and there are opportunities for shared learning which clearly justify the added value of a continental capacity strengthening programme
- There is not enough capacity to form strong multi-institutional partnerships between national agricultural research institutes, universities, extension agencies, farmers' organizations, private enterprise and other groups that are essential to bring about the required change

- Confirmation was provided that previous capacity development initiatives did not achieve the desired impact because they were fragmented and only addressed single issues
- Successful models from elsewhere have shown that a comprehensive approach targeting key institutions and their development partners can be sustainable and provides a platform for out- and up-scaling
- Experiential learning approaches are needed in order to ensure that newly acquired skills are applied suitably and benefit the institution as well as the individual
- Interventions such as mentoring require a continuing commitment over a substantial time period to be effective

A fundamental principle of the design of SCARDA is that the capacity strengthening activities will maximise the opportunity for value-adding through the inclusion of satellite institutions and the exposure of capacity strengthening providers to the real problems and potentials of agricultural research institutions. This includes the adoption of holistic innovation systems approaches to strengthening capacity for agricultural innovation involving multiple partners. Gender issues require affirmative action to improve opportunities for women's careers in the NARS and to promote gender equity amongst research partners and beneficiaries.

SCARDA's purpose is '*To strengthen the institutional and human capacity of African agricultural research and development systems to identify, generate and deliver research outputs that meet the needs of poor people'*. This will be achieved through an innovative approach that addresses the whole integrated capacity strengthening needs of the Focal Institutions and demonstrates this to wider ranges of Satellite Institutions through engaging in joint training activities. A review of institutional capacity strengthening experiences in Africa and elsewhere reveals that in order to bring about lasting change, experiential learning is essential and short-term and piece-meal interventions have limited value (Watts *et al*. 2003). The study also showed that the concept of working with core focal institutions, as platforms for subsequent scaling up of the capacity strengthening approaches, has been successfully applied in Latin America. The regionality of the SCARDA approach will be demonstrated in both service provision and through the sharing of lessons learned using regional learning platforms. SCARDA is purposefully designed from the outset to ensure continued out and up-scaling through the way that the capacity strengthening is conducted as well as through the M&E and Communications Strategies.

SCARDA will have four main outputs:

1. Agricultural research management systems and managerial competencies to conduct high quality research strengthened in African NARS
2. The capacity of African NARS to undertake quality agricultural research for development sustainably strengthened
3. Tertiary agricultural teaching and training institutions empowered to match the capacity building they offer to changing market demands.
4. SCARDA approach for capacity strengthening is documented, validated with and owned by key stakeholders.

Outputs 1 and 4 contribute to Strengthening competencies and capacity in agricultural research management and outputs 2, 3 and 4 contribute to Strengthening capacity for professional development in agricultural research and development.

As in the conduct of the scoping studies, SCARDA will continue to benefit from critical expertise and technical support in training, monitoring and evaluation from the University of Greenwich's Natural Resources Institute (NRI).

Strengthening capacity to build capacity

An ever increasing number of reports (IAC 2004), declarations (AAU 2001 and NEPAD 2003) and resolutions at the World Summit for Sustainable Development in Johannesburg in 2002 and at the meeting of African Heads of State and Government in Sirte in 2004 demand urgent action on a scale that will make a difference in the lives of 700 million Africans. However, Ståhl and Hall (2003) argue that the ambitions to 'build a rural renaissance in Africa' will fail unless research and development programmes seriously address the question of recruiting a new qualified and motivated generation into the scientific profession. After decades of under investment, loss of staff incentives and failure to recruit replacements for an ageing cadre of professors reinvigorated tertiary agricultural education is a *sine qua non* for Africa to be capable of sustained endogenously driven innovation in agriculture and natural resource management (AfDB 2005).

A radically new approach to building African scientific and institutional capacity is needed geared to solving individual and institutional problems and maintaining global standards. To be effective and sustainable this has to be based on African-grown approaches and priorities for agricultural capacity development that must address the following needs:

- to upgrade teaching and learning processes to embrace integrated approaches that recognise the interrelationships among land use sciences and practice
- to improve access to locally relevant educational materials based on agricultural research experiences in Africa
- to breakdown the institutional and programmatic separation of universities and national agricultural research institutes
- to systematically upgrade knowledge and skills of researchers and educators
- to interest the youth in agricultural sciences by transforming agricultural education so that it leads to attractive career opportunities
- to contextualise teaching in the management of risk and uncertainty related to African smallholder agriculture, e.g., climate change, globalization and international agreements and conventions
- to prepare students better with the systems (soft) skills and tools they need for careers in knowledge-based innovation systems.

The institutional structure for wide scale reform of tertiary agricultural education is largely in place in the form of effective education networks such as the African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE) and the Regional Universities Forum for strengthening capacity in agriculture (RUFORUM).

ANAFE, which is the largest education network in Africa with a membership of 124 universities and colleges in 34 countries, facilitates inter-African university collaboration to ameliorate deficiencies and difficulties caused by increasing enrolments that have not been matched by budget increases. A review of ANAFE (Temu et al 2003).caused the Network to revise its objectives to:

- Making curricula more responsiveness to development needs
- Enhancing the quality of the delivery of education
- Strengthening capacity to access and use different sources of information
- Improving integration in the teaching of related land use and environmental topics;
- Enhancing the enrolment of women commensurate with their roles in the agricultural industry
- Establishing vertical links in the education system from formal schooling to professional training
- Creating synergies among institutions and programmes in agricultural education, research and extension

- Improving aspects of value adding, marketing and agri-business

RUFORUM is a consortium of 12 Universities in five East and Southern Africa which seeks to support inter university collaboration in MSc and PhD training in crop, animal and other natural resource improvement and management areas. There are many other capacity strengthening networks that have a lot to offer in their topics and areas of special expertise or knowledge (FARA 2006b)

A successful open access training resource for teaching of animal genetics has been developed by African animal geneticists, the Swedish University of Agricultural Sciences (SLU) and the International Livestock Research Institute (ILRI) http://agtr.ilri.cgiar.org (Malmfors et al 2001). This approach to improving the teaching of animal genetics has been taken up across Africa (Nengovhela 2004) and is readily extendable to other topics and, as such, it serves as a pilot model for similar components in the proposal for Building Africa's Scientific and Institutional Capacity (BASIC), which is aimed at raising the quality and relevance of African tertiary agricultural education by:

- Creating awareness of the challenges facing tertiary agricultural education in Africa and negotiating for action at country, sub regional and regional levels
- Providing a means for African colleges and universities to identify and express their common priorities for strengthening their capacities for building capacity
- Providing a pragmatic cost-effective means for African universities to draw on each other and on non-African partner universities for strengthening teaching and learning curricula, methods and approaches
- Providing an efficient means for African universities to strengthen their linkages with the agricultural research community and incorporate locally-relevant cutting-edge research findings into current teaching and training materials
- Creating linkages with the private sector that will assure the relevance of the training provided to the employment that the graduates expect to engage in
- Providing a means for sharing all BASIC products between all participating African universities (Africa to Africa collaboration)

BASIC will improve the content, quality and mode of delivery by African university teaching in agriculture and natural resource management. In doing so, BASIC will leverage the huge past expenditure by African governments and donors on the infrastructure of African universities that is currently under productive in terms of the quality of the graduates that they are producing.

BASIC is envisaged as a three way collaboration based on priorities and agendas set by African universities. Non-African universities with particular expertise will provide help in developing curricula and teaching and learning approaches, infrastructure and materials. Initial partnerships are being formed with the National Association of State Universities and Land Grant Colleges (NASULGC) in the US and the Network of European Agricultural (Tropically and Sub-tropically Oriented) Universities (NATURA) and contacts are being made to access similar support from Brazil, China, India and Japan. The Tech-MODE approach advanced by COL offers effective means for the universities to make their knowledge resources available to farmers and equally importantly to enable the farmers to influence university curricula and make the teaching and research more contextually relevant. It also enables universities to cater for candidate who are too far away to participate in conventional in-service training schemes. FARA is working with COL and the American Distance Education Consortium (ADEC) with a view to extending such opportunities more widely to the Forum's stakeholders.

CONCLUSION

Africa is aware of the need to revitalise and strengthen its capacity for innovation in agriculture. The new approaches to strengthening the human and institutional capacity required to improve rural livelihoods discussed in this paper benefit from being interlinked with each other and by involving a wide range of partners who are at the forefront of innovative approaches to capacity strengthening.

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