**Improving capacity for Agricultural Research in the ASARECA sub-region through the SCARDA project**

## 1. Introduction and Background to SCARDA

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) is a leading sub-regional research organisation, established in 1994 to serve the sub-region. It has a ten country membership, namely Burundi, DR Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda.

A key output of the ASARECA results framework is capacity building for agricultural Research and Development in Eastern and Central Africa. To contribute to this result area, ASARECA, through its Partnerships and Capacity Development (PCD) unit implements a number of capacity development projects and initiatives targeting National Agricultural Research Systems (NARS) in the sub-region. One of these capacity development projects is *Strengthening Capacity for Agricultural Research and Development in Africa* (SCARDA). SCARDA is a continent-wide—Forum for Agricultural Research in Africa (FARA) project, implemented at the sub-regional levels by the sub-regional organizations (SROs), namely, CORAF in the West African sub-region, ASARECA in the ECA sub-region and SADC in the Southern Africa sub-region, under the subsidiarity principle.

At the conception of the SCARDA project, FARA had commissioned an assessment of National Agricultural Research Systems (NARs) in sub-Saharan Africa to identify major areas of weakness and recommend strategies for strengthening. The assessment had identified human and institutional capacity for designing, implementing and managing scientific research as the most important of the weaknesses. Thus the purpose of SCARDA is to strengthen the institutional and human capacity of African agricultural research systems, to identify, generate and deliver research outputs that meet the needs of the poor. The expected outputs of SCARDA are:

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

In implementing SCARDA in East and Central Africa (SCARDA-ECA), ASARECA works closely with the Regional Universities forum for capacity building in agriculture (RUFORUM) the lead service provider for the project, which has a coordinating role over other service providers. SCARDA-ECA targets the National Research systems in three countries namely Sudan, Rwanda and Burundi, through their respective National Agricultural Research Institutes (NARIs) as Focal Institutions (FIs). The three FIs are Agricultural Research Corporation (ARC), *Institut Des Sciences Agronomiques Du Rwanda* (ISAR), and *Institut Des Sciences Agronomiques Du Burundi* (ISABU) for the three countries respectively. ASARECA

implements SCARDA-ECA through a five member Project Management Committee (PMT) comprising of representatives from ASARECA, RUFORUM and each of the three FIs. The PMT collectively plans, manages, and reviews the implementation of the project. The Natural Resource Institute (NRI) of the University of Greenwich, United Kingdom plays a backstopping role in the implementation of SCARDA-ECA.

## 2. The SCARDA Project Components and implementation in Eastern and Central Africa

Operationally, the SCARDA project has three key components of (a) strengthening competencies and capacity in agricultural research management, (b) strengthening capacity for professional development in agricultural research and development, and (c) supporting the empowerment of tertiary agricultural education and training institutions. Services under the first two key components (a) and (b) of SCARDA-ECA are provided in collaboration with specialized service providers.

Under the first key SCARDA component (a), SCARDA-ECA works closely with the *Institute for People, Innovation and Change in Organizations* (PICO) in a series of learning workshops to strengthen the competencies and capacities of Agricultural research managers in the three SCARDA-ECA FIs. PICO is an institutional organizational development organization with experience in many developing countries, particularly in Africa. They have been involved in change processes in more than 10 national agricultural research systems.

Through the design and implementation of a mentoring program for middle level and early career development staff of the FIs, PICO also contributes to SCARDA's second component (b) of strengthening the capacity for professional development. The other main activities under this second component (b) is MSc training for FI staff also in their early career development, and the delivery of short targeted re-fresher courses in selected agricultural research and development areas. MSc training is undertaken through five RUFORUM member universities in the sub-region, namely Makerere University, University of Nairobi (UoN), Jomo Kenyatta University of Agriculture and Technology (JKUAT), Sokoine University of Agriculture (SUA) and Egerton University (Table 2). A few of the MSc students undertake their studies at the Sudan Academy of Sciences and are based at the ARC Sudan.

The delivery of short targeted courses is undertaken in collaboration with the Natural Resources Institute (NRI) of UK and the National Crops Resources Research Institute (NaCRRI) of Uganda. The NRI has long standing expertise in Integrated Pest Management (IPM) in sub-Saharan Africa, Asia and Latin America, and has conducted training courses for researchers, agricultural extension officers, NGOs and farmers. NaCRRI is a National Research Institute in Uganda, working closely with Makerere University in research and training in the areas of Crop Science, Agronomy and Biotechnology.

Under the third component of SCARDA (c), a study was recently undertaken to evaluate the demand for agricultural graduates in the sub-region.

## 3. Strengthening competencies and capacity in agricultural research management under SCARDA-ECA: recent developments

To strengthen competencies and capacity in agricultural research management SCARDA-ECA seeks to develop the capacities of the three FIs to be more strategic in their agenda-setting and more proactive in their program implementation. The approach involves engagement with management teams of the FIs in a learning process which includes identification, in a series of learning workshops, of key management issues and challenges facing their institutions. These issues/challenges are then assigned to teams (e.g. peer learning groups) and individuals to address, using principles acquired during the learning workshops. The 'practice and problem solving processes' which occur between consecutive workshops, is considered a time of learning lessons which are shared with the broader participant groups, during the subsequent learning workshops.

This approach is built on the concept of 'systemic competence development', where theory, practice and coaching support are integrated in one coherent learning process, supporting directly the performance on the job by participants. The aim of the learning workshops is to gain a better understanding of trends and related concepts and their implications, and the development of practical strategies and skills to enable participants to develop the know-how to engage effectively with new approaches in addressing the leadership and management challenges they face.

Due to the complex nature of changes facing managers and leaders in African research institutes, and the fact that there are no blueprints in dealing with change processes, participants in the learning workshops are not usually "trained" to carry out certain activities, but rather equipped with basic principles and inspired and motivated to explore practical ways of dealing with their own situations as issues arise in their day to day work. Each participant develops the basis for practical action based on the basic principles learned. The potentials for peer coaching and exchange are also explored. The learning workshops usually focus on five key competence areas in the management of research organizations and programs. In each of these areas, participants are expected to gain, over time, a level of proficiency that will enable them to professionalize their engagement in change in their organisations and to improve their overall performance as leaders and managers.

The five competence areas are summarized in the diagram below (Adopted from PICO team).


**3.1 Specific organizational and competency issues considered during the learning workshops at ISAR, ISABU and ARC.**

In their characterization of the general work environment, participants' lack of appreciation and motivation in the organizational work environment was a major gap in all the three FIs. For example, asked when they last received an appreciation from their supervisors some participants responded that 'this happened quite a long time ago' (months, or more than a year!) whereas the majority could not even remember. Moreover, they reported that when feedback is given, it is done in a non-motivating style. Staff presented a picture of a preponderance of 'corrective' or 'negative' feedback, with little validating of positive feedback; thus, defensive communication is a common phenomena in the organizational environments. Participants also clearly presented a general lack of motivation – material and non-material - in the system. The discussions pointed to underutilised human potential within all three FIs, a situation which can, to a large extent, be attributed to lack of a proactive supportive culture in these organizations. The specific issues considered were:

- ***Lack of appreciation and motivation***. A fair block of workshop time was spent on developing the concepts and tools and facilitating participants to practice on how to appreciate and motivate their colleagues, supervisors and those who report to them.

- ***Feedback*** as a tool for improving communication, validating staff and enhancing overall performance: Rules for giving and receiving feedback were introduced and participants were given multiple opportunities to practice the techniques for effective giving and receiving feedback.

- The above tools were combined with some inputs on best practices regarding staff motivation and on individual dispositions for improving internal communication in the organization, including in the context of staff performance management. Importantly, ***peer learning (and Change project***) groups were established with a number focusing on practising feedback and on developing a feedback culture within teams and the organization as a whole.

- ***Mentoring and coaching:*** Participants explored the concepts of mentoring and coaching and learned how the mentor can support the mentee – e.g. personnel they supervise or other colleagues in their teams or in the organization. Following understanding of the concepts, mentoring orientation workshops were held for mentors and mentees to deepen their understanding and to develop clearer mentoring frame works. The learning and mentoring orientation workshops were used NOT to mentor individuals, but to facilitate the introduction of mentoring and coaching into their organizations. It is expected that the mentoring culture will continue even after the SCARDA project and a large number of staff will be mentored by colleagues over time. Some peer learning groups established during the workshops will focus on how to develop a mentoring and coaching culture further within the organizations (Table 1).

### 3.2 Some specific gaps and proposed interventions for improving research management

Some of the key gaps identified during the learning workshops were subsequently developed into pear learning group (PLG) thematic areas or 'change projects' (CPs). A sample of thematic areas identified are summarized in the table below.

Table 1: PLG thematic areas and the FIs interested in following up.

| **PLG Thematic areas** | **Organization (I** |
|---|---|
| **Strategic management**:<br>o How to enhance capacity to influence top management and policy makers<br>o How to effectively align research to national policies<br>o How to decentralise decision making within the organization | ISAR &<br>ISABU |
| **Feedback** as a tool for supporting good performance practices, behavior and improving performance at individual level and strengthening the spirit of team work | ISAR, ARC &<br>ISABU |
| **Mentoring and coaching** as tools for technical and leadership capacity development in organizations and teams | ISAR, ARC &<br>ISABU |
| Proactive **resource mobilization** | ISAR, ARC & |

| | |
|---|---|
| beyond the national public sector sources | ISABU |
| Improving **human resource development**, (e.g. through staff motivation and recruitment of personnel according to merits and qualification) | ISABU |
| Improving **scientific writing skills** | ISAR, ARC |
| Improving **technical publication** capacity | ISAR, ARC |
| **Research planning and tracking** (including M & E) | ISAR, ARC |
| **Interfacing with end-users** for impact<br>o How to better respond to farmers' needs?<br>o What institutional changes are needed for increasing impact?<br>o How to develop and strengthen participatory research?<br>o Facilitating adoption of released technologies | ISAR, ARC & ISABU |
| **Improving efficiency in procurement procedures** | ISAR |
| New Research and Extension **organizational structure** (in the context of the on-going re-organization (ISAR) or strategic planning (ISABU) | ISAR & ISABU |

**PLG= Peer learning group; The PLG teams undertook to perform specific tasks (and they will be supported as needed by SCARDA ECA). Progress made will be reported and discussed at the next learning workshop. PLG are processes driven by self appointed teams to ensure that the learning and sharing continues (PLG) or that a process for changing ways of doing business is designed and implemented in an organization.*

In addition to the PLG tasks, individual participants committed themselves to individual areas for personal development – which they would like to focus on during the period leading to the next learning workshop. The common areas identified in were:

- My management style
- How can I interact with others better – i.e. self confidence
- How can I give and receive feedback
- How strategic I am in use of my time -Time management
- Improving my ability to develop my personal vision
- How I can motivate others
- How I can facilitate others to grow – i.e. mentoring and coaching

Overall, it was observed that the inculcation of cultures of mentoring and coaching, feedback and business thinking (including being proactive) are areas with significant

potential to improve research management in the FIs. Progress in these areas should help unleash the leadership and management potential in these organizations.

**4. Strengthening capacity for professional development in agricultural research and development through MSC training under SCARDA**

A total of 34 young and mid-level scientists from the FIs and a few other ASARECA countries are undergoing training at master's level in various disciplines, including Plant Breeding, Horticulture, Animal Science, Agricultural Information and Communication Management, Research Methods and Range Management. The students are registered at five universities in the ASARECA sub-region the ARC in Sudan. Table 2 gives student summary statistics.

**Table 2: Summary statistics on Masters training under SCARDA-ECA**

| SERVICE PROVIDER | MASTERS COURSES | COUNTRY | No. STUDENTS |
|---|---|---|---|
| **Makerere University, Uganda** | Plant Breeding | Sudan | 3 |
| | Plant Breeding | Burundi | 2 |
| | Plant Breeding | Rwanda | 1 |
| | Soil Science | Rwanda | 2 |
| | Agric Extension | Rwanda | 1 |
| **Egerton University , Kenya** | AICM | Sudan | 1 |
| | AICM | Uganda | 2 |
| | AICM | Ethiopia | 1 |
| | AICM | Kenya | 1 |
| | AICM | Tanzania | 1 |
| | AICM | DRC | 2 |
| | Animal Breeding | Rwanda | 1 |
| | (Soil Science) NRM | Rwanda | 1 |
| **Sokoine University of Agriculture, Kenya** | Soil Science | Burundi | 1 |
| | Horticulture | Burundi | 1 |
| **University of Nairobi , Kenya** | Range Management | Sudan | 1 |
| | Animal Science | Rwanda | 1 |
| **Jomo Kenyatta University of Agriculture and Technology, Kenya** | Research Methods | Burundi | 1 |
| **Agricultural** | Breeding/Biotechnology | Sudan | 4 |

| | | | |
|---|---|---|---|
| **Research Corporation, Sudan** | Soil and Water | Sudan | 4 |
| | Organic Agriculture | Sudan | 2 |
| **Total** | | | **34** |

The students started implementing their approved research projects from mid- 2009. They are currently in the second year of study. SCARDA-ECA recognizes the need to enhance skills of students and academic staff beyond academic disciplines. Besides the prescribed curricula, the PMT facilitated specific short skill enhancement courses in the service provider universities.
In 2009, students and staff underwent training in proposal and scientific writing, web 2.0 and e-content development, online statistics course and scientific data management.

In today's world, the scientists and managers must be proficient in Information and Communication Technology. SCARDA-ECA provided all project sponsored students with laptop computers which have immensely facilitated student learning, particularly through search for literature over the internet, communication via email and processing of student assignments. *After receiving my laptop, I felt like my potential as a student had been unlocked,* said one student from Egerton University, Kenya.

SCARDA-ECA has also facilitated brokerage of partnerships between the participating universities to engage experts in the region and beyond to teach specific courses, and also to interact with and mentor the students. The Masters students have close interaction with PhD students and some have shared lecture hours and seminar sessions. This approach enhances SCARDA-ECA's intention of enhancing quality of research and training. RUFORUM as the SCARDA- ECA lead service provider leveraged additional funds totaling US$ 750,000 from DELPHE, AGRA and internally, to support an additional twenty students from the SCARDA focal countries, and other ASARECA countries.

SCARDA-ECA through the PMT closely monitors the progress of student training through physical field visits, student quarterly reports, student presentations, and progress reporting by MSc programme coordinators in the respective service provider universities. All these efforts are geared towards assuring quality, and ensuring that students complete their studies in 24 months as stipulated in their scholarship letters.

The masters training has gone through on the ground realistic/challenges that have been adequately ameliorated through coordination by PMT and cooperation among the stakeholders in the process.

Among the key challenges in the MSc programs are:

i. Substitution of originally identified students by FIs. This resulted in delayed registration and start of semesters in some universities. All service provider universities were very accommodative and worked with the students to settle them into programmes.
ii. A number of students experienced the challenge of using English as a language of instruction due to their prior education background in alternative languages. A

modest budget was included in student scholarships for English language support.

iii. A number of health related aspects could not be covered by scholarship. The respective universities and the LSP mobilized resources to meet the costs.

**5. Strengthening capacity for professional development: Enhancing skills in M&E, Integrated Pest Management (IPM), and laboratory management and plant disease diagnostics**

African scientists like all others are working in the reality of a dynamic world occasioned by technological advancements, demographic dynamism and environmental changes arising from either human factors or natural phenomena such as climate change. The demand for agricultural outputs in terms of volume and quality as dictated by changing consumer preferences are not constant. Thus new equipment as well as diagnostic techniques and research methods are entering the market every day. There is need therefore for deliberate efforts for researchers to keep abreast with these changes as they affect agricultural research and its expected impacts. The SCARDA project therefore identified that besides the mentoring and the MSc programs, there is need for the delivery of targeted short courses for researchers as another way of strengthening the capacity for professional development in the FIs. Key areas identified for training were those of monitoring and evaluation, integrated pest management, laboratory safety and plant disease diagnosis.

**5.1 Improving M&E and communication skills**

A training workshop on planning, monitoring, evaluation and communication was conducted in Kigali, Rwanda, for selected key participants from all three FIs in early 2009, to enhance their capacity to deliver on these important aspects of Agricultural Research and Development. The course targeted individuals with specific responsibilities for management of information, monitoring, reporting and communication. The trainers facilitated participants through a challenge identification exercise relevant to their institutions with respect to M&E and Communication. Challenges identified which included; unclear definition of staff roles, limited financial resources and lack of training in communication and M&E. The course was positively evaluated by participants. Facilitators were able to assist with interpretations as need arose. A field trip made during the training revealed that the training was quite relevant for technical staff in the focal institutes.

**5.2 Improvement of skills in Integrated Pest Management (IPM)**

One of the research objectives for the focal and satellite institutions is to improve the management of pests and diseases using sustainable approaches which mitigate potentially adverse effects to crop and livestock production. Consequently one training workshop in each FI was conducted on Integrated Pest Management (IPM). The objectives of the training were to enhance the participants' understanding of the IPM concepts and to provide them with information to help them to apply IPM principles and practices in their own context. On

completion of the course, the expectation was that participants would have an enhanced understanding of:

- The role of IPM within sustainable agricultural development
- The importance of correct pest, disease and weed identification/diagnosis and accurate assessment of incidence as a basis for applying appropriate control measures
- The available range of pest, disease and weed control measures and when to utilize them
- Safety issues and quality standards in relation to crop protection practices
- Where to access useful and reliable sources of information on crop protection, and particularly on IPM.

**5.2 Improvement of skills in laboratory management and plant disease diagnosis**

In collaboration with NaCRRI, SCARDA ECA conducted a training workshop at the Namulonge Research Station in Uganda, for research technicians from all three FIs. The objectives of the training were to:

1. Impart knowledge and skills to technicians on standard operating procedures for laboratory safety, management and equipment maintenance.
2. Impart knowledge and skills to technicians on commonly used diagnostic techniques to attain optimal crop productivity.

The 14 days of training workshop provided participants with a highly interactive platform for learning, discussions and exchange of best practices as well as suggestions for new approaches to the participant's roles, and functions in their respective research institutions. Hands-on practical exercises and exposure to the modern research laboratories of NaCRRI equipped the technicians with enhaced skills for handling laboratory work.

**6.0 Demand study for agricultural graduates in the Eastern and Central Africa sub-region**

**Strengthening of competencies and capacity in agricultural research management and the** capacity for professional development in agricultural research has to be accompanied by the empowerment of tertiary agricultural education and training institutions to offer agricultural graduates who can cope with the with the changing demand of agricultural research and development processes. To contribute to the analysis of this situation, SCARDA-ECA commissioned a study of the demand for agricultural graduates in the sub-region. The following conclusions were drawn from the study:

- The demand for graduates in agriculture who have the right skills and mindsets can be expected to be strong in the coming decades provided the universities invest in building up their constituency amongst farming communities and development institutions

- There is a real opportunity for the regional university and research networks, such as RUFORUM and ASARECA, to provide leadership and vision to this change

- AET institutions (and indeed faculties within those institutions), need distinct and real autonomy, with producers and stakeholders on their governing bodies. This will provide a powerful incentive to link training with market demand

- There is a real opportunity, and considerable mutual benefit, to a coordinated effort where the universities and the NGOs plan and implement an initiative to develop a high quality agricultural educational system for the region.