Inception Report

STRENGTHENING CAPACITY FOR AGRICULTURAL RESEARCH AND DEVELOPMENT IN AFRICA (SCARDA)

Volume 2

Preliminary Institutional Analyses of Focal Institutions

Submitted

by FARA to DFID, United Kingdom

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FORUM FOR AGRICULTURAL RESEARCH IN AFRICA,

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EXECUTIVE SUMMARY

This document contains summary reports of **rapid institutional analyses** carried out with SCARDA 'Focal Institutions' towards the end of the Inception Phase of the Programme. Earlier scoping studies generated a large dataset on the capacities and the broad capacity strengthening priorities of the main agricultural research and development and training organisations in sub-Saharan African countries. Using criteria developed during the scoping studies, stakeholders at a Regional Inception Phase Review Workshop held in Accra in August 2007 selected a total of eleven institutions to be the Focal Institutions for SCARDA. The institutions were chosen taking into account their strategic importance in national agricultural research and development systems in their respective countries, the magnitude of their capacity needs, and the potential for generating impact within a short period of time.

SCARDA will adopt a new approach by developing and implementing tailor-made packages of capacity strengthening activities for its Focal Institutions covering the full range of their needs. The primary aim of the rapid institutional analyses was to develop **activity plans** for each of the Focal Institutions through an assessment of their needs and those of their core research and development partners. This was done through a participatory process involving discussions with senior management at the Focal Institutions and with a range of stakeholders, including decision makers at Ministries of Agriculture, other research organizations, extension officers, non-government agencies and farmer organizations. In some countries, mini-workshops were held involving SWOT analysis, the mapping of capacity strengthening priorities against available delivery mechanisms, and the discussion of strategies to ensure sustainability of the programme outcomes. In the activity plans that were produced, emphasis was placed on identifying interventions that can begin during the early stages of project.

For many of the Focal Institutions, SCARDA's approach will involve new ways of working. An additional objective, therefore, was to assess whether they are open to a process of **institutional change** and are willing to share experiences and approaches with others. Lack of human resource capacity may constrain the ability of some Focal Institutions to meet the demands of their existing programmes if they embark on a new initiative of this type. Therefore, it was necessary to establish whether they have the absorptive capacity to embark on the SCARDA process without compromising their existing operations. These issues were discussed during the visits and the response of the Focal Institutions was very positive. Staff expressed considerable interest in SCARDA's comprehensive approach and they were keen to develop joint activities with other institutions. **Letters of Commitment** have already been signed by Directors of six of the institutions. Others have confirmed their intention to sign and transmit the letters to FARA.

Limitations in staffing levels and in basic infrastructure were clearly apparent in some institutions; notably, the Focal Institutions in the Republic of Congo, The Gambia, Rwanda and Burundi and their activity plans have been designed to account for these constraints. A flexible approach will be required so that some resources can be used to meet critical needs for small items of equipment and computer software if the full benefits of training activities are to be captured. Some of the Focal Institutions, such as the Botswana College of Agriculture and the Institut d'Economie Rurale have excellent facilities training which can be used to host regional training courses. Use will also be made of regional centres of excellence such as Biosciences East and Central Africa which is based in Nairobi.

The activity plans developed with the Focal Institutions are structured around agricultural research management (contributing to output 1) and quality science and professional skills development (contributing to output 2). The visits to the Focal Institutions confirmed the demand for a **core course in agricultural research management** which will place emphasis on incorporating innovations system approaches into the identification, implementation and management of agricultural research. Resource persons from selected Focal Institutions will receive training to develop and deliver the course in their respective sub-regions. This training will be conducted in mid-2008 and the courses will be run in mid-late 2008 and early 2009. The core course will be complemented by short courses in subjects of specific relevance to individual Focal Institutions. Follow-up activities will involve mentoring of course participants and workshops and electronic interaction to share lessons and experiences.

Interventions to enhance the quality of science will consist of MSc studentships, short courses, training for technicians, support to the development of MSc programmes and mentoring. In most cases the MSc studentships will be for two years and will run from the beginning of the 2008 academic year. The favoured option for several Focal Institutions is for MSc by research in order to ensure that students continue to contribute to existing programmes. Short courses will be used for the development of professional skills as well as for upgrading specific disciplinary expertise. Priority subjects for quality science include biotechnology and biosafety, biometrics, crop protection, horticulture, livestock breeding and nutrition and the packaging of research outputs for end users. Topics prioritised for professional skills development include Intellectual Property Rights (IPR) management, information and communication technologies, proposal writing, negotiation and other 'soft' and 'systems' skills.

Fuller details of the preliminary institutional analyses may be found in the detailed consultants' reports. These will be used as resource materials for the next stage of the institutional analyses which will take place at the beginning of programme implementation. The activity plans will be confirmed during the institutional analyses which will be coordinated by the Lead Service Providers and the Natural Resources Institute. Estimated costings for the activity plans are shown in budget tables in Annex 1 of volume 1 of the Inception report.

Note:

The report on Focal Institutions in Burundi and Rwanda is based on visits to these countries made in July 2007. In the case of Rwanda, the report has been updated to include subsequent discussions with the Director of L'Institut des Sciences Agronomiques du Rwanda on the telephone and via electronic mail. The report on the National Agricultural Research Institute in The Gambia is based on a visit made in June 2007 and later interaction using electronic mail. The remainder of the reports were produced following visits of a few days each to the Focal Institutions during the second half of November 2007. The visit to the Centre de Recherches Agronomiques de Loudima in the Republic of Congo was still in progress at the time this document was submitted and the information is therefore necessarily incomplete.

BOTSWANA

Focal Institutions:

A. Botswana Agriculture College

B. Department of Agricultural Research

1. Background

The aim of the SCARDA programme is to build capacity to conduct effective agricultural research for development which is demand-led, market-led and client-oriented. Effective agricultural research requires close collaboration between education, research and extension and the building of sustainable partnerships with all stakeholders in the production to market chain.

Based on the report by the Consultant for the scoping study, and outcomes of the sub-regional and regional workshops, Botswana was selected as one of three pilot countries for SCARDA in the SADC sub-region. The 'Focal Institutions'.are the Botswana College of Agriculture (BCA) and the Department of Agricultural Research (DAR) and representatives of both institutions participated actively in the scoping study. These are the main institutions involved in agricultural research for development in Botswana and strengthening their collaboration on research and training will form the basis for an effective NARS. The Focal institutions are well supported by the government which is keen to promote more effective linkages between agricultural education and research. BCA also has considerable responsibility for research-extension linkages and it will be important to involve extension in the SCARDA programme to develop a more inclusive agricultural knowledge and information system (AKIS).

SCARDA will work initially with selected Focal Institutions but representatives of Satellite Institutions within Botswana, and from other countries in the sub-region, will participate in regional training. ,

2. Brief description of Focal Institutions

Department of Agricultural Research

The Department of Agricultural Research (DAR) is a department of the Ministry of Agriculture (MoA) and is the Government mandated organisation responsible for agricultural research in Botswana. The vision statement of the MoA is: '--- commits to providing a dynamic leadership in the development of sustainable, diversified and competitive agriculture and conservation of natural resources to contribute to the development of food security, poverty alleviation and socio-economic growth in partnership with stakeholders'. The current policy of GoB is to promote the commercialisation of the smallholder sector. This is being done through the NAMPAD (National Agricultural Master Plan for Agricultural Development). NAMPAD is strongly supported by Israeli consultants, including capacity development of extension officers and at both BCA and DAR, in support of the 3 divisions of the programme: rain-fed agriculture, irrigated agriculture and dairy farming.

The Directorate and main research station of DAR is based at Sebele, a few kilometres outside Gaborone. The total staff complement is 232 of which around 100 are researchers. There are 3 regional stations with a fourth special region for farming on vertisols. There are 5 sub-stations and 12 experimental ranches and numerous associated experimental sites. DAR is organised into 4 Divisions – Crop Research, Animal Research, Support Services and Administration. Crop Research has 5 programmes; Horticulture, grain legumes and oilseeds, cereal improvement, soil and water management, production systems. Animal Research has 5 programmes; Beef cattle improvement, Dairy improvement, small stock improvement, animal

feeds, range and pasture management. Genetic conservation covers both crops and animals. In addition there are three discipline-based sections; plant pathology, entomology and weed science. Support Services divide into, Estate management, biometrics and ICT, library services.

Botswana College of Agriculture (BCA)

Botswana College of Agriculture (BCA), an associate institution of the University of Botswana, established in 1991 by the Act of Parliament is a parastatal organisation financially supported by government. The college currently has 1022 students (681 male and 341 female) and 120 staff (29% female) of whom around 100 are lecturing staff.

The BCA offers agriculture training at higher diploma level in: Agriculture , Animal Health and Production and Forestry and Range Ecology and also bachelor of science (BSc) degrees in: General Agriculture, Crop Science, Animal Science, Agricultural Education, Soil and Water Conservation Engineering, Agricultural Mechanization. Master of Science (MSc) degree programmes are also offered in Agricultural Education, Animal Science and Production with streams in Animal Nutrition, Animal Breeding and Reproduction, and Animal Management Systems and Crop Science with streams in Agronomy, Crop Protection and Horticulture.

BCA hosts the Centre for In-service and Continuing Education (CICE). This is the outreach Department of the Botswana College of Agriculture with responsibilities to:

- Promote, co-ordinate and deliver short-term courses in Agriculture and related fields;
- Develop and disseminate extension training information and other materials
- Promote linkages between agricultural research, extension and agricultural training

The short courses offered at CICE may be requested by organisations or group of individuals or scheduled by CICE to fill the known knowledge gaps. Training at CICE is conducted by BCA academic staff which is required to give 15% of its time to teach and train at CICE. However, in cases where BCA has no manpower needed for a specific course, CICE can source expertise outside the course. CICE has excellent facilities for training and accommodation which makes it an ideal centre for regional training courses.

Lecturing staff are expected to spend 60% of their time in teaching (15% of which at the Centre for continuing Education), 30% on research and 10% on community support activities.

3. Strategic role of Focal Institutions

Department of Agricultural Research (DAR)

DAR is mandated by Government of Botswana (GoB) to conduct research in support of agricultural development in the country. Human resources development is guided by a Training Plan but Government funds do not meet all the departments training needs.

The main areas of research are in sorghum and millet improvement, improvement of beef and dairy cattle, soil and water management, development of appropriate farm machinery and germplasm conservation. Important areas of emerging research are commercial horticulture, underutilised crops, small stock improvement.

Botswana College of Agriculture (BCA)

BCA is the only institution in the country mandated to offer training in agriculture at tertiary level and contributes to the National Plan for Human Resource Development in Agriculture by training students at all levels from Diploma up to MSc. The Government Extension Services depend on BCA students for their recruitment, as well as for in-service training. The

College also delivers a wide range of training courses in response to demand such as a recent one on mushroom cultivation.

The College makes a substantial contribution to AR4D and has a research budget of around £100,000 which it is unable to fully spend, due to the lack of capability among younger staff in proposal writing and project development. Some of the current research topics are; improvement of local chickens, commercial and food security uses of local flora, guinea fowl farming, diseases of ostrich chicks, agricultural technology dissemination and adoption.

4. Rationale for selection of Botswana as a target country and the focal institutions

Although agriculture is estimated to contribute only 3% of GDP in Botswana, this figure is distorted by the large contribution to the economy of the mining sector (mainly diamonds). Farming remains the main source of income for the rural population and contributes to the income of many others (many town-dwellers own 'cattle stations'). Agriculture also represents an opportunity for increased income from exports and could improve the livelihoods of the rural poor. Agriculture also contributes raw materials for much of Botswana's industry such as leather and brewing. In addition, Botswana is representative of arid livestock-based agro-ecologies which are facing the challenge of climate change.

The primary agricultural research and development institutions in Botswana are the Department of Agricultural Research and the Botswana College of Agriculture. While the working linkages between DAR and BCA are not as strong as they should be, they have the advantage of being located on the same campus (Sebele). The proximity of the two institutions facilitates the close collaboration being promoted by SCARDA. SADC also has some offices on the Sebele campus where it is proposed to locate the SCARDA Coordination office. Human resources development within DAR is guided by the Ministry of Agriculture Training Plan. BCA has a 'Continuing Education' Programme with good facilities for residential training and has experience of hosting regional training courses.

5. Strategic linkages

DAR and BCA have the advantage of sharing a campus and belonging to the same Ministry. In Botswana agricultural extension is also administered within the Ministry of Agriculture. The conditions should be ideal for the evolution of a well linked NARS and AKIS. However, all parties agree that collaboration and information exchange between DAR and BCA and research-extension linkages need to be improved. The constraints to improved working relationships and the development of a sustainable collaborative framework, need to be explored in an in-depth institutional analysis.

6. Interest and commitment of focal institutions

Both BCA and DAR have played a role in the inception phase of SCARDA and sent representatives to the sub-regional workshop. The consultancy wing of BCA provided the consultant for the situation analysis in Botswana, who also presented the synthesis report at the sub-regional workshop. Both institutions have made senior staff available during this mission and both Heads have signed the letter of commitment.

7. Key capacity development needs of focus institutions

The key capacity development needs of both focal institutions is in research management to enable their staff to be better able to develop sound proposals and to implement, monitor, report and financially manage, multi-stakeholder projects. They need also to understand better the principles of IAR4D and national innovation systems (NIS) to develop programmes which are more market oriented and meet stakeholder demand.

Most of the short course training needs identified across the sub-region could be included as components of 'Research Management' (see below).

There are some specific training needs in support of emerging research programmes such as commercial horticulture and biotechnology.

The Focal Institutions also require training of technicians so that research is better supported in terms of data collection and management and laboratory equipment is better maintained.

8. Evidence for sustainable HR policy beyond SCARDA

The Ministry of Agriculture has a training plan for DAR and BCA and long-term planning and initiatives run to 2016 (Vision 2016 Policy and Programmes). The main medium-term initiative in the Ministry is NAMPAD which runs to 2012. Many of the senior staff in both DAR and BCA are approaching retiring age but it is not clear if there is a long-term plan to recruit well qualified new staff. This needs to be further explored under the institutional analysis.

9. Schedule of proposed activities

(see Table 1 for summary of proposed activities and budgets)

Output 1: Research Management

Institutional analysis

The present poor system linkages both within and between agricultural R & D institutions and between those institutions and the wider stakeholders, needs to be explored more deeply by the institutional analysis. As well as identifying the key constraints to effective linkages, this would also serve as a baseline against which to measure SCARDA's contribution to sustainable institutional change. The institutional analysis in the three SADC pilot countries will be conducted by NRI and the Lead Service Provider, ANAFE, and will be undertaken shortlt after the SCARDA Implementation Phase begins.

Research Management Course

All partners in Botswana (SADC-FANR, BCA and DAR) agree that a course in 'Research Management' should be the core of SCARDA and will allow all the participating institutions to arrive at a common understanding of research management in the context of the new paradigms of IAR4D and NIS.

The regional training course for SADC will be developed by BCA in partnership with NRI and hosted at BCA's Centre for In-Service & Continuing Education.

In order to ensure continuity among SCARDA participating countries across the Africa Region, NRI will provide a 'training of trainers' input under which course organisers from BCA and equivalent 'service providing' institutions in the other two sub-regions (3 people per sub-region), will undergo a two-week training programme. This training programme will be held at NRI or at one of the SCARDA Focal Institutions. Participants will then return to their institutes to set-up the training course. The BCA staff are available to travel in May which would enable the course to be delivered before the farming season begins in southern Africa in November 2008. The dates will be confirmed during the early stages of the Implementation Phase in consultation with the Lead Service Providers in each of the sub-regions).

It is envisaged that DAR will enter 45 of its research staff for this course with a smaller number from BCA and similar numbers from Zambia and Lesotho. CICE can accommodate 30 students per course, so that the course will to run 4 or five times during 2008 and 2009.

Other courses

The core course in Research Management will give an overview of the subject covering units such as introduction to IAR4D and NIS theory and practice, proposal writing, M & E, market-led research, data management, budgeting and budget management. However, some staff may

require more detailed training in some of these areas and will undergo additional specialist courses of 1 week's duration.

Output 2: Quality Research

MSc training

DAR has around 6 – 8 staff and BCA about 4 at BSc level, who would benefit from MSc training and who are unlikely to receive Government support within the next 2 years.

Technical training

A total of 10 technicians would benefit from short course training in laboratory and field research support services.

Mentoring

Mentoring schemes will be set-up to provide guidance for young scientists when they first begin their careers or have recently returned from PhD training. Six suitable candidates from Dar and 4 from BCA have been identified.

Re-tooling courses

The last component of this output is short courses to raise the skill level of scientists in specific areas relevant to key areas of research in the two focal institutions. Two such areas identified by DAR were quality assurance relevant to biotechnology products, seed standards and commercial horticulture products, especially for export markets.

10. Activities for immediate implementation ('quick wins')

[i] Institutional analysis – this can be implemented as soon as funds become available for the implementation.

[ii] Development of the short course in Research Management can begin immediately with the preparation of Resource material at NRI and the 'Training of trainers' held in May 2008

[iii] Focal institutes have been asked to match courses to the needs of their individual staff right away so that the first batch of trainees can begin their courses as soon as possible.

[iv] Under output 3, tracer studies can begin immediately to obtain the background information on demand to design the new MSc course

11. Note on Coordination of SADC-SCARDA

The process leading to the appointment of the Focal Person for the SADC-SCARDA will begin once the MoU with FARA is signed and DFID has approved the implementation phase to proceed. It is likely that it will take at least three months for SADC to advertise the post, interview candidates and make an appointment. In order that activities can begin without having to await this appointment, inputs from NRI will be required during the initial three month interim period.

Once the Focal Person is appointed, the ideal location for the SCARDA office would be the Sebele campus. This would locate the Coordination office on the same campus as the two focal institutions.

12. Roles of each partner in Botswana

SADC: SADC-FANR will appoint and accommodate the SADC-SCARDA Focal Person. As there is no budget for overhead costs for the Focal Institutions, all project management responsibilities will fall to the Focal Person and ANAFE, the Lead Institution – Budget management, reporting, both technical and financial, communication strategy, M & E, as well as facilitating system linkages within and between countries and promoting sustainable

institutional change in the way AR4D is done in the SADC pilot countries. Coordination functions are covered by Output 4.

The SADC-SCARDA Focal Person will appoint and chair the SCARDA Committee membership which will include the contact persons from each of the 4 Focal Institutions and the Committee might be expected to meet twice per year and would be an opportunity for all partners to share experiences.

BCA: The College acts as both a service provider and a receiver as it will host some of the courses but also receive training, both in order to upgrade their research capability and improve their capacity to build capacity. As the main purpose of SCARDA is to improve agricultural research for development, the budget for BCA is only half that of DAR. They will however, access additional funds as service providers in delivering regional training courses.

AR: The Government Department of Research has the larger share of the training budget reflecting the main purpose of SCARDA and their greater number of research staff and larger capacity gaps. Most of the training activities involving DAR staff come under outputs 1 and 2.

NRI: NRI has been closely involved in providing technical support to the SADC-SCARDA and this support has been welcomed by the Director, Ms. Margaret Nyirenda and Dr Keogile Molapong. SADC-FANR wishes this relationship to continue into the implementation phase, when NRI is able to provide interim Coordination. NRI will work with ANAFE to lead the institutional analysis for the SADC Focal institutions. The third major contribution proposed is that NRI collaborates with BCA in the development of the Research Management training course.

ANAFE: SADC-FANR has selected ANAFE to be the Lead Institution for SCARDA in SADC.

13. Agreed next steps

All partners are now ready for the start of SCARDA implementation. The immediate priority for SADC-FANR is to sign the MOU between SADC and FARA before the Xmas break and to start the process to appoint the SADC-SCARDA Focal Person.

Focal Institutions:

- Match courses to individuals
- Ask individuals to select favoured courses and costs
- Gather information on appropriate courses in the region
- BCA to identify staff to participate in the ‘trainer of trainers’ course in May
- Try to get some people onto courses ASAP [quick wins]
- Identify Mentors

NRI:

- Develop training of trainers course in ‘Research Management’
- Provide interim coordination

SADC:

- Finalise MoU signing and advertise for a SADC-SCARDA Focal Person

14. Persons met

For the present the Acting director of DAR (Dr Mosupi) and the Dean of BCA (Dr Chabo), wish to remain as the respective contact persons for the Focal Institutions and Dr Molapong for SADC.

SADC-FANR:

Dr. K. Molapong, Research Manager, kmolapong@sadc.int

DAR:

Dr P.O.P Mosupi, Chief Arable Research Officer [Acting Director of Research, Min of Ag.]

Email: pmosupi@gov.bw

Dr D. Machacha, Acting Chief Agricultural Research Officer [Crops]

Ms. B. M. Makoba, Laboratory Coordinator

Dr. Joyce P. Macala, Chief animal Production & Range Research Officer

Dr Stephen Chite, Senior Plant Breeder

BCA:

Dr. Ricks Chabo, Dean Faculty of Agriculture, University of Botswana rchabo@bca.bw

Dr. E. B. Khonga, Deputy Dean, Faculty of Agriculture, ebkhonga@bca.bw

Dr. B. Sebolai, Senior Lecturer, Botswana College of Agriculture bsebolai@bca.bw

Mr P. Lebatha, Director, Centre for In-Service & Continuing Education plbatha@bca.bw

MINISTRY OF AGRICULTURE

Mr J. P. Singabapha, Acting Extension Coordinator

Consultant: Dr Rory Hillocks

Table 1 Department of Agricultural Research, Botswana and Botswana College of Agriculture

INSTITUTIONS		**BCA+DAR**			
		Yr 1	Yr 2	Yr 3	**TOTAL**
Research management	No	£	£	£	
Core course (training of trainers)	3	10,000			
Core course delivery	65	35,000	35,000		
Post-training support			10,000	10,000	
Specific short courses	37	22,000	22,000	7,500	
Reflective learning workshops					
Mentoring	13	4,000	5,000	4,000	
Attachments/Exchanges	15	6,500	9,500	4,000	
TOTAL		**77,500**	**81,500**	**25,500**	**184,500**
Capacity to do Quality Research , MSc Courses					
Biotechnology	2	4,000	14,000	4,000	
Laboratory technology	1	2,000	7,000	2,000	
Horticulture	2	4,000	14,000	4,000	
Entomology	1	2,000	7,000	2,000	
Plant Breeding	1	2,000	7,000	2,000	
Animal Science	1	2,000	7,000	2,000	
Resource Conservation	1	2,000	7,000	2,000	
Economics	1	2,000	7,000	2,000	
Soil & water management, Crop husbandry, Farm management,					
Short course					
Technicians upgrade	10	21,000	21,000		
Mentoring	10	2,500	5,000	2,500	
TOTAL		**43,500**	**96,000**	**22,500**	**162,000**
Professional skills development					
Short courses	99	27,500	55,000	25,000	107,500
Biotechnology, Communication skills, IPR management, Quality Assurance					
Website design management, Equipment maintenance, Data management					
TOTAL		**27,500**	**55,000**	**25,000**	**107,500**

LESOTHO

Focal Institution:

National University of Lesotho – Faculty of Agriculture

1. Background

The aim of the SCARDA programme is to build capacity to conduct effective agricultural research for development which is both, demand-led, market-led and client-oriented. Effective agricultural research requires close collaboration between education, research and extension and the building of sustainable partnerships with all stakeholders in the production to market chain.

SCARDA will work initially with selected focus countries but all member states of each of the three sub-regional; organisations will benefit through participation in regional training.

Based on the report by the Consultant and outcomes of the sub-regional and regional workshops, Lesotho was selected as one of three 'pilot countries for SCARDA in the SADC sub-region [with Botswana and Zambia]. The National University of Lesotho (NUL) has been proposed by SADC-FANR as one of the focal institutions which will participate in the sub-region.

2. Brief description of focal institution

NUL's mission is to promote national advancement through innovative teaching, learning, research and professional services, producing high calibre and responsible graduates able to serve their communities with diligence. The University has seven faculties, each headed by a dean, and three institutes, each headed by a director, including the Faculty of Agriculture. The faculties and institutes are responsible to Senate, the supreme academic body of the University. The NUL is predominant among Lesotho organizations in agricultural research, with by far the highest number of PhD qualified staff. The DAR and LAC (both Ministry of Agriculture and Food Security [MAFS] components) have significant numbers of staff qualified to Masters level. The gender balance is very good in agricultural research institutions in Lesotho. There is also a healthy age distribution of staff at NUL FA and the DAR (MAFS). Staff retention is good at the NUL, but very poor in government organizations (DAR and LAC).

Mandate of the NUL Faculty of Agriculture

> **NUL's vision** is to be a leading African university responsive to national socio-economic needs; committed to high quality teaching, life-long learning, research and community service, respected nationally and internationally.
>
> **NUL's mission** is to promote national advancement through innovative teaching, learning, research and professional services, producing high calibre and responsible graduates able to serve their communities with diligence.

NUL's Governance, Academic and Management Structure

The University has seven faculties, each headed by a dean, and three institutes, each headed by a director, as indicated below.

- Faculty of Agriculture
- Faculty of Education
- Faculty of Health Sciences
- Faculty of Humanities
- Faculty of Law
- Faculty of Science and Technology
- Faculty of Social Sciences
- Institute of Education
- Institute of Extra-Mural Studies
- Institute of South African Studies

The faculties and institutes are responsible to Senate, the supreme academic body of the University. The Senate sets the policy framework on academic matters and is chaired by the Vice-Chancellor. It includes in its membership the Pro-Vice-Chancellor, the Librarian, all deans, all heads of departments (currently 27), professors of the University who are not deans or departmental heads, the President of the Student Representative Council, all institute directors, the Director of Consulting, the Dean of Student Affairs, two representatives of Congregation and the Registrar presently numbering 51.

Staffing levels in NUL and other relevant organisations (disaggregated by gender)

The DAR and LAC (both MAFS components) have significant numbers of staff qualified to Masters level. Unlike many other countries, the gender balance is very good in agricultural research institutions in Lesotho.

3. Strategic role of focus institution

The Government of Lesotho (GOL) identifies and understands that strengthening research capacity is a fundamental strategic action to the attainment of three key aspects of its Vision 2020: a) strengthening development management capacity, b) achieving a well established technology and c) a well developed resource base.

The Agricultural Transformation Blue Print of 2005[2], the National Action Plan for Food Security (NAPFS), has just completed a ten-year plan (2007 -2017) for action and implementation. For all the programmes proposed under this ten year plan, capacity building components for different sub-sectors of the MAFS are outlined. Specifically, the sub-programme 1.4, component 1.4.1 is entirely devoted to the development of Agricultural Research and Extension with capacity building items for the NARIs.

The National Action Plan for Food Security has a proposal for the Department of Agricultural Research of the Ministry of Agriculture and Food Security to strengthen research and extension. The Department of Human Resources is responsible for training plans for the MAFS. A Training Needs Assessment of the Ministry of Agriculture in 2000, the then Ministry of Agriculture Cooperatives and Land Reclamation (MOACLR), reported that nearly 30% of the ministry staff had never been to any kind of training course in the present positions. It identified a number of performance gaps and offered a number of recommendations. These included emphasis on management training and development programmes for younger staff (15 yrs to go before compulsory retirement of 45 years), and the upgrading of staff, especially in agricultural engineering and management[3]

[2] MAFS, (2005b) Agricultural transformation Blue print

[3] MOACLR, (2000) Training needs assessment survey report volume II

4. Rationale for selection of Lesotho as a target country and the focal institution

Lesotho's economy is based on limited agricultural and pastoral production, light manufacturing (textile, clothing, milling and leather), remittances from Lesotho mine workers in RSA and more recently from royalties from exporting water to RSA. Commercial quantities of diamond have recently been discovered.

Agriculture makes a direct contribution of 17% to Lesotho's GDP of approximately US$1 billion, and an indirect contribution through linkages with manufacturing and processing of about 10%. Crops hold a dominant share (50%) of Lesotho's agriculture with livestock constituting about 35% and services accounting for the rest. The dominant staple crop in terms of planted area (50-70% of yearly cultivated area) is maize. Other major crops include sorghum, wheat, peas and beans. The livestock sub-sector consists of cattle (25%), sheep (45%) and goats (30%). Livestock are particularly important to livelihoods in the higher, more remote areas. In general, agriculture in all forms provides 85% of employment in rural areas. Subsistence farming continues to be the most important economic activity in the rural areas. 51% (35% of rural household heads and 16% of adult household members) of household members were found to engage in subsistence farming, with current national unemployment rate at 23.2%.

Only 10% of its total land area is arable, and Lesotho produces only 30% of its food requirement. Lesotho's major export commodity, wool and mohair, is in decline.

The 2002/2003 national poverty surveys showed a 56.6 % incidence of poverty, and an increase in ultra poor households. If the MDG of halving poverty by 2015 is to be achieved, it requires a sustained annual growth rate of 7.5%.

Constraints include urbanization and land degradation (c40 million MT of soil/year is estimated to be lost from Lesotho's range and crop land), youth unemployment, retrenchment of mine workers in RSA, heavy losses of livestock due to stock theft, and HIV/AIDS (26% of adult population). These factors combine to present a very narrow livelihood base for many Basotho. The ecosystem is fragile and terrain is challenging to establishing desirable livelihoods.

Land is a major driver to agricultural productivity, and the government's strategy is to facilitate the gradual evolution of commercial farming through market-led mechanisms supported by land reform, with consolidation of fragmented holdings to larger blocks to make it amenable to mechanized farming and other inputs for higher yields.

Water is inadequately distributed spatially and seasonally. Irrigation infrastructure is poor and the weather is often characterized by extreme weather conditions of heavy frost, heavy unexpected rain and drought.

The Faculty of Agriculture of the NUL is a well organised and respected fulcrum around which the capacities of other NARS institutions under the MAFS and NUL can be built. NUL FA is both a research organisation and a capacity building organisation. NUL is the only University in Lesotho. Building the capacity of NUL FA to build capacities of other NARS institutions will strengthen all R&D institutions in Lesotho, including civil and private organisations. NUL FA has good facilities and linkages. It is in the process of joining RUFORUM to strengthen its capacity to build capacity in Lesotho, advance its programme and ensure high academic standards of her graduates.

NUL FA, with access to the NUL's World Bank funded Development Information Centre (DIC), new faculty building, and other important facilities has proposed changes in the coordination and management of the faculty level programmes and projects. A Support Unit for Teaching, Research and Agricultural Development **(SUTRAD**) is expected to make it work. The scoping study consultant has gone further in her report to include links between from SUTRAD model to the components of MAFS and ultimately to farmers and other

stakeholders who also legitimately have demands on agricultural research such as industry, NGOs and consumers.

NUL FA is starting its first batch final year level diploma students on a Student Enterprise Programme emphasizing experiential learning (partly based on LAC's success with a similar programme). This goes some way towards moving the curriculum from the academic to more something practical and analytical that will stimulate community engagement and agribusiness. A second model for SCARDA implementation would bring the LAC and NUL FA SEPS models together in partnership.

In Lesotho the linkage between MAFS, FA / NUL and regional Networks and organizations SUTRAD FA / NUL will make a devoted effort in partnership with ISAS and Institute of Education to strengthen the linkages with these capacity building institutions.

The NUL FA has a good age and gender balance – although there is some attrition of staff to RSA (due to their better working conditions).

5. Strategic linkages

The NARS in Lesotho is comparatively simple, with the main players being component parts of the NUL and the MAFS. The Faculty of Agriculture of the NUL is a fulcrum around which the capacities of other NARS institutions under the MAFS and NUL can be built. NUL FA is both a research organisation and a capacity building organisation. NUL is the **only** University in Lesotho. Dealing with key underlying institutional problems of agricultural research **and** training at the NUL FA will have a rippling effect over the country's agricultural training and research and extension. Building the capacity of NUL FA to build capacities of other NARS institutions will strengthen all R&D institutions in Lesotho, including civil and private organisations.

The main Ministries relevant to research and training in Lesotho are: The Ministry of Agriculture and Food Security (MAFS) and the Ministry of Education. The MAFS has 7 Departments, the most relevant of which are:

- Department of Agricultural Research (DAR) - Research
- Lesotho Agricultural College (LAC) – Training to Certificate/Diploma levels

However, the Departments of Field Services (extension), Crops, Livestock, Forestry and Natural Resources, and Information are also all relevant in that they all need or generate research outputs.

The main academic research and training organisation is the National University of Lesotho (NUL), in which the following are relevant to SCARDA:

- Faculty of Agriculture (FA) – Research and training to BSc/MSc levels
- Institute of Southern African Studies (ISAS) – Research, including some agricultural studies

A significant number of demand-side institutions exist in Lesotho ranging from large, highly organized and nearly commercial NGOs such as Lesotho National Wool and Mohair Growers Association (LNWMGA), pig farmers and poultry farmers associations. The majority are registered members of the Lesotho Council of NGOs (LCN).

At the intermediate level are the: DFS, DLS, DCS (all Departments of MAFS); RSDA (Rural Self-Help Development Association, which assists farming and non-farming rural enterprise development.), LCN (Lesotho Council of NGOs) and AENRC.

There is a proposal at advanced stage to create the **Lesotho Institute of Agricultural Development** (LIAD) by consolidating DAR, LAC and DAI (all elements of the MAFS), as an autonomous institution. This proposal is held up at the moment because a Business Plan,

demonstrating how the new Institute will generate an income sufficient for it to be independent of Ministry funding, has not been done.

6. Interest and commitment of focal institutions

The Principal Secretary (MAFS) was emphatic about his support for SCARDA. The Pro Vice-Chancellor, NUL also expressed great enthusiasm and signed the agreement letter.

7. Key capacity development needs of focus institution and partners

The following needs are based on wide consultation by the country consultant (Irene Annor-Frempong) and further consultations by an NRI consultant that formed the first step of the envisaged comprehensive NARS-wide institutional analysis. The capacity needs are set out by category of beneficiary first and then in Tabular form corresponding to SCARDAs logframe Outputs.

General capacity needs

- Need to maintain the critical mass of good calibre professionals to effectively generate and disseminate research output for effective uptake of technologies – especially acute in government organisations where staff retention (e.g. in the DAR) is poor, especially after they have been trained.
- Poor documentation and dissemination of research results, especially to extension, NGOs and farmers
- Lack of coordination between actors in the NARS. Lack of formal structures for interaction between demand, intermediate and supply side organisations.
- Weak M&E of activities and outcomes (impact) across agricultural R&D organisations (including training orgs)
- Poor learning materials for research and training organisations

Supply side capacity needs

- Three priority areas in agricultural research and development:
    - Environmental issues especially on soil and water and conservation (as emphasized by the Acting Principal Secretary MAFS)
    - Technical issues
    - Agro-processing and marketing.
    - Food security (expressed as the need to increase productivity of crops and livestock), farming systems and sustainable livelihoods.
- Agricultural research priority setting (including demand identification), partnership building, research performance indicators, monitoring and evaluation, resource mobilization, negotiation, scaling-up and scaling-out innovations and technologies, leveraging science to influence policy, have been identified as key areas for effective research management. Researchers' inability to engage effectively with communities is routed in poor communication of agricultural research outcomes, agricultural project management, agricultural value chains and their management
- Research methodology
- Social / soft skills
- Teaching skills.
- Leadership, management and administrative skills for heads of departments and Deans.
- Relevant software, expertise in data management and data analytical skills
- Systematic plan for mentorship and coaching at NUL
- Multi-disciplinary and multi-institutional collaborative research, and academic discourse.
- Professional agricultural bodies
- Development of ICT and the installation of e-learning at NUL new FA building

Demand side capacity needs

- Demand-side organisations feel that: "*Graduates are narrow in the technical areas, but what is worse it the fact that they* ***lack critical thinking*** *and their* ***analysis and application skill are poor****, they are too* ***ignorant of the realities of agriculture*** *in their own country, they* ***find it difficult to accept that they can be taught by the farmer*** *and that the farmer knows more, they* ***lack the practical, multi-disciplinary skills and the soft skills to deal with farmers.****"* They identified critical capacity needs in:
    - Building and sustaining farmer groups
    - Engaging partnerships involving farmers
    - Building platforms for demand articulation and accessibility to supply side institutions

Intermediate organisations capacity needs

- Service providers need to have the necessary technical know how, communication skills, leadership skills, out-sourcing skills, skills in farmer organization (establishment and maintenance). Current service providers lack critical skills including ICT skills and practical knowledge. Within the Ministry of Agriculture and Food Security, extension agents seem to have poor links with other departments both at head quarters and district levels.
- Critical organisational gaps include research methodology, data/information analysis, manual preparation and extension methods, specialist knowledge in key areas (livestock and crops), and professionalism. It is important that strategies are developed to retain competent personnel and a good plan for provision of in-service training is in place.
- The agricultural extension policy identifies the strengthening of the Unified Extension System (UES) and supports its implementation nationwide. Priority is also put on formal training activities through Farmer Training Centres (FTC). The extension policy deals with areas such as outsourcing, privatization, networking and building of efficient communications channels and proper coordination between and within all levels.

A Coordination Unit is needed for the national agricultural research system. This would be located in the University, but work with all NARS stakeholders. The **"Coordination Unit for Research, Training and Outreach"** would have a number of functions:

- Coordination of research activities within the Faculty and with other research organisations in the country
- Coordination and management of the Outreach programme
- Development of partnerships and linkages (within and outside the country)
- Organisation of short courses to address emerging needs (nationally and in SADC) from time to time
- Organising guest lectureship
- Develop mentorship programme
- Develop "Graduate Associate Programme" (for best students at graduation)
- Management of the Faculty Journal
- Developing interdisciplinary research themes
- Supporting the writing of funding proposals
- Address short-term training needs of the Faculty to enhance research, teaching and outreach.

The establishment of this Coordination Unit could be an activity of SCARDA.

SCARDA activities resulting from consultations with NUL and partners, by Output

A. Strengthening Agricultural Research Management Capabilities & Systems					
STRENTHENING METHOD	**Priority 1** **Leadership + fundraising**	**Priority 2** **Research and extension methods and their managerial implications**	**Priority 3 Planning, monitoring and evaluation, impact assessment**	**Priority 4** **Intra and inter-Institutional coordination/ partnerships**	**Priority 5** **Knowledge management/ dissemination and learning**
Hosted Group training courses		*	*		
Other short courses	*		*		
Post-training support					
Mentoring scheme	*				
Internships, attachments, short-term visits			Internships	Short-term visits	Short-term visits
Exchange visits	*			*	*
MSc programmes					
Communities of Practice		*			*
Other				Research, teaching and outreach support unit!	Seminars workshops writeshops Journal

! A Coordination Unit is needed for the national agricultural research system. This would be located in the University, but work with all NARS stakeholders.

B. Strengthening the Quality of "Science" for Development					
	Priority 1 **Soil & Water Conservation/ NRM**	**Priority 2** **Lab technology**	**Priority 3** **Food security**	**Priority 4** **Economic horticulture (including tree crops, viticulture etc)**	**Priority 5** **Animal Science (LAC)**
Hosted Group training courses					
Other short courses		Practical courses			* Tailor-made courses for LAC staff at NUL FA
Post-training support		*			
Mentoring scheme					
Internships, attachments, short-term visits	Short-term visits	Internship		Short-term visits	
Exchange visits					
MSc programmes	*		*	*	
Communities of Practice					
Other					

C. Continuing Professional Development (for Operating in the Agricultural Innovation Systems Context)				
	Priority 1 **Social/soft skills for participatory research with communities, NGOs and farmer associations (including bottom-up research needs assessment; farmer group establishment, multi-disciplinary skills)**	**Priority 2** **Farming systems, livelihood systems and innovation systems approaches (including value chains)**	**Priority 3** **Course delivery: skills, methods and materials (including SEPS, e-learning and distance learning). To instil critical thinking, analytical ability, entrepreneurship, practical skills, understanding of farming realities in Lesotho.**	**Priority 4** **Communications and information management** **(sourcing of information, use of information; translation of research outputs into dissemination materials, scientific writing)**
Hosted Group training courses	*		*	*
Other short courses		*		
Post-training support				
Mentoring scheme	*	*	*	*
Internships, attachments, short-term visits		Internships		
Exchange visits				
MSc programmes				*
Communities of Practice	*	*		
Other				Workshops Writeshops Journal Agricultural Society

D. Activities under Output 3 (Empowerment of training organisations to match the capacity building needs)

- Tracer studies of graduates from FA NUL and from LAC MAFS
- Curriculum development in selected subjects at NUL (including agricultural extension which was identified as weak). Curriculum development should include include new areas of thinking – innovation systems; soft skills, entrepreneurship, markets and marketing, ICT, practical skills…
- Graduate Associate Scheme (supporting the best 10 students per year at graduate for one year to gain experience in agriculture)
- Competitive fellowships to ensure that trainings and other opportunities are awarded on merit and have clear objectives, outcomes and supervision
- SEPS: further development of Supervised Enterprise Projects (adequate supervision, good methodologies, network of attachments, M&E, follow up studies…)

8. Evidence for sustainable HR policy beyond SCARDA

Sustainability

Staff retention is fairly good in the FA NUL, but poor in the DAR MAFS and the LAC MAFS.

Ability to promote the approach more widely

FA NUL is willing to host courses for other institutions from the region in areas where it has a comparative advantage.

Ability to support weaker institutions such as those from countries emerging from conflict

The FA NUL is comparatively small (only 400 students), so would itself qualify as a weaker institution which would mostly look to organisations in RSA to strengthen its capacity.

9. Schedule of proposed activities

The excellent scoping study country report, discussions with diverse NARS actors and two short workshops with Faculty of Agriculture staff informed the prioritization of activities for SCARDA presented in the Tables above. However, further Institutional Analysis is required to refine these. All those met are willing to take part in such an exercise in the New Year. No costs have been allocated to activities, but some unit costings for short courses (at NUL) and MSc courses have been included in the full repor. Some activities will be attended by several people, and others by single individuals. The locations of capacity development activities have not been identified. The indicative budget for Lesotho Implementation phase is £355,556.

Some additional capacity development mechanisms are envisaged. These include: a) A "Graduate Associate Programme", as one way of reducing the "brain drain" of good graduates away from agricultural research; b) A "Coordination Unit for Research, Training and Outreach" that will improve the present weak coordination between NARS partners; c) Workshops, Writeshops, an agricultural Journal and an Agricultural Society to improve the current poor situation of dissemination of research outputs for a range of users. These (and other mechanisms that might be identified during the Institutional Appraisal) will need careful facilitation to ensure that benefits accrue across the wider NARS.

10. Activities for immediate implementation ['quick wins']

Research management short course

Applications for MSc courses

Set up Mentoring schemes

11. Agreed next steps

Completion of institutional analysis

12. Persons met

During the visit, the main actors in the National Agricultural Research System in Lesotho were met, apart from the Department of Field Services (the main extension service):

- Pro Vice-Chancellor national University of Lesotho
- Dean Faculty of Agriculture, NUL
- Senior staff, FA NUL
- Principal Secretary, Ministry of Agriculture and Food Security
- Director, Department of Agricultural Research, MAFS
- Principal and staff of Lesotho Agricultural College
- Director, Department of Science and Technology, Ministry of Communications, Science and Technology
- Managing Director, Rural Self-Help Development Association
- Chairman and Vice-chair of the Wool and Mohair Producers Association

Consultants: Mr Barry Pound and Dr Irene Annor-Frempong

Table 2: National University of Lesotho Budget

INSTITUTIONS		**NUL**			
		Yr 1	Yr 2	Yr 3	**TOTAL**
Research management	No	£	£	£	
Core course delivery	30	20,000	15,000		
Post-training support		10,000	5,000		
Specific short courses	26	15,000	15,000		
Reflective learning workshops					
Mentoring	10	2,000	6,000	2,000	
Attachments/Exchanges	12	6,000	7,500	1,500	
TOTAL		**53,000**	**48,500**	**3,500**	**105,000**
Capacity to do Quality Research					
Laboratory technology	2	4,000	14,000	4,000	
Research methods	2	4,000	14,000	4,000	
Horticulture					
Entomology	1	2,000	7,000	2,000	
Plant Breeding	1	2,000	7,000	2,000	
Animal Science	1	2,000	7,000	2,000	
Resource Conservation	1	2,000	7,000	2,000	
Economics	1	2,000	7,000	2,000	
Short course					
Technicians upgrade	5	11,500	11,500		
Mentoring	5	1,000	3,000	1,000	
TOTAL		**30,500**	**77,500**	**19,000**	**127,000**
Professional skills development					
Short courses	60	15,000	30,500	13,000	58,500
Biotechnology, Communication skills, IPR management, Quality Assurance					
Website design management, Equipment maintenance, Data management					
TOTAL		**15,000**	**30,500**	**13,000**	**58,500**

ZAMBIA

Focal Institutions:

A. University of Zambia – School of Agricultural Sciences

B. Natural Resources Development College

1. Background

Zambia is a landlocked country comparatively well endowed with natural resources. Agriculture is the main source of livelihood and income for 60% of the population who live in rural areas. Most of Zambia's staple foods are produced by the small-holder farming sector who also grow several cash crops. Larger-scale commercial farming is increasingly significant, particularly for export production. A major challenge is sustained and increased integration of the small-holder agricultural sector into markets. Zambia's fifth national development plan emphasised continued liberalisation, commercialisation and the promotion of public and private sector partnerships in the agricultural sector, while ensuring gender equity in the provision of effective services. Well functioning linkages, close coordination, public-private alliances, and internal management capacity building are seen as key in delivery of the outcomes of improved food security.

Based on the report by the Consultant and outcomes of the sub-regional and regional workshops, Zambia was selected as one of three 'pilot countries for SCARDA in the SADC sub-region and the 'Focal Institutions' are to be University of Zambia School of Agriculture (UoZ) and the Natural Resources Development College (NRDC)

2. Brief description of focal institutions

NRDC

NRDC falls under the Human Resources and Administration Department of the Ministry of Agriculture and Cooperatives. Its Principal has significant autonomy in terms of management and development, but staff recruitment is regulated through the Ministry and Public Service Commission. It has eight focal academic departments; Agriculture Education and Extension; Animal Science; Crop Science; Agriculture Business Management; Food and Nutrition; Fisheries; Agriculture Engineering and Water Engineering. It also has a farm manager. NRDC has over 300 hectares of land for Horticultural Crops, Piggery, Poultry and Dairy units and fish ponds. It also has a ranch 5 km off the campus used to raise beef Cattle and other small ruminants. The college farm provides a training environment in which scientific knowledge and practical skills are integrated for the students. It has 39 staff at B.Sc. level and above, 16 with MSc and 2 with PhD. 80% of the staff are over 35 years old, and the male female ratio is 43:10.

UoZ [School of Agricultural Science (SOAS)]

SOAS is a school within the University of Zambia, headed by a Dean which is a rotating position. UNZA is autonomous in terms of its management, but relies on public funds for nearly all of its revenue. There are 7 departments: Crop Science, Soil Science, Animal Science, Agricultural Economics and Extension, Food and Nutrition, Agricultural Engineering, and Agro-processing. In 1990 the School developed an in-service training programme in nine areas: Principles and practices of animal nutrition, Pest management, Soil and plant analysis and interpretation, Soil conservation, Micro-computer applications in

agriculture, Experimental designs in agriculture, Project appraisal and animal husbandry practices. The main objective of the courses is to update the participants with new developments in their disciplines and improve their practical skills.

3. Strategic role of focus institutions

UoZ

The Ministry of Agriculture and Cooperative's strategy for capacity strengthening in the agricultural sector since independence has rested a network of agricultural training colleges providing technical staff for research and extension services and increasingly for the private and NGO sectors. The University of Zambia School of Agriculture has provided graduates for these services. A managed and transparent policy of in-service training has provided opportunities for technicians to progress into professional and managerial positions, funded through departmental training budgets. Both the colleges and the School of Agricultural Sciences have recognised the need to respond to changes in market demand for their graduates and periodically updated, revised and expanded their curricula. The School of Agriculture currently offers graduate programmes in crop science and soil and water management (including irrigation), and underwrites the Diplomas in various branches of agriculture provided by the Natural Resources Development College, at times assisting with the teaching programme. With increased liberalisation in the higher education sector, and a high demand for higher education, a number of private colleges and universities are springing up, offering more choice and also an element of competition for the public sector agricultural training institutions.

NRDC

Historically, the mandate of NRDC was to provide a high standard of technical training in agriculture for the public and private sectors, and these sectors continue to expect this as a service. NRDC's mission as articulated in its recently developed strategic plan is "***to train high calibre human resource, conduct research and consultancy and undertake commercial ventures in order to promote agricultural development that will ensure food production, wealth creation and proper natural resources management responsive to the needs of the local and international communities".*** NRDC, under a new Principal, has recently funded the development of its own strategic plan, which details short-term strategic objectives which are detailed, poverty-focused and well aligned with those of the 5th National Development Plan. NRDC has also embarked on a programme of resource mobilisation, curriculum review and management improvements, including management of its substantial farm which is central to its training mandate. It is also aiming to develop and expand its capacity for research, consultancy and the provision of tailor-made training services.

4. Rationale for selection of Zambia as a target country and the focal institutions

Both focal institutions have played, and will continue to play, a leading role in developing the skilled and well qualified human resource base which is essential for the provision of both public and private agricultural services to both small and large scale agriculture in Zambia. Nearly all of the senior staff in the public agricultural sector research and extension and large private sector agro-enterprises (including agro-processors), as well as the many NGOs involved in various aspects of agriculture, are graduates of one or both institutions. It is these organisations, the main "customers" of both institutions, that provide essential services to the agricultural producers and are also major employers in both rural and urban areas.

While historically both focal institutions have effectively provided basic and in-service training of a high standard to the agricultural sector, increasing liberalisation of the sector, globalisation, advances in technology and the increasing competitiveness and complexity of agricultural markets brings new challenges in terms of training and skill development. In addition, Zambia's rural population remains poor, with women often playing the main role in food production and processing, and depending largely on agriculture. The diverse market, agro-ecological and socio-economic settings of rural Zambia require agricultural services to

match, providing a further challenge to two training institutions which are based in the capital city and use large-scale commercial methods on their training farms.

In terms of meeting the criteria set during the SCARDA inception phase, both institutions have technical and managerial leadership supportive of the strategy of capacity strengthening as part of institutional change management in order to improve their performance and increase its relevance to the demands and requirements of national agricultural development plans and targets.

5. Strategic linkages

NRDC has not been the recipient of any major donor funded project for many years, receiving most of its funding through the MAC budget, course fees and sale of produce. NRDC's core programme of training at Diploma level covers the range of topics, all of which are of direct relevance to the agricultural sectors contribution to poverty reductions and more equitable access to agricultural services, as elaborated in the latest strategic plan. NRDC's main "funding partner" is its parent directorate in the Ministry of Agriculture and Cooperatives. Through historical connections NRDC is a valued provider by other government departments using it for in-service training and also many private sector companies involved in agriculture, water and health. NRDC has, through the Ministry, recently been in partnership with Zambia Export Growers Association (ZEGA) which has a horticultural training unit on its land. The Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) is a strategic partner it has started working with in developing short courses for farmers and CBOs based on situational analysis. Other partners include NGOs such as the Heifer Project International (HPI).

UoZ-SOAS has a long-standing link with the Norwegian Agency for Development Cooperation which supported the development of its in-service training programme. The school is a member of the Zambia task force of the Genetic Resources Policy Initiative which is implemented by Bioversity and IDRC. Financial support is provided by The Netherlands Ministry of Foreign Affairs, BMZ/GTZ, IDRC, Rockefeller Foundation, CIDA, and Bioversity.

6. Interest and commitment of focal institutions

UNZA is reviewing its curricula and seeking to further develop its role in problem solving research to address issues of strategic importance within the agricultural sector, recognising that this will require enhancing its capacity to work more effectively both inter-departmentally and also with other partners outside of UNZA. The Dean and her senior staff are familiar with what SCARDA is aiming to achieve, participated in the rapid institutional analysis, and have signed up to the letter of commitment.

The Principal and senior staff of NRDC are also familiar with what SCARDA is aiming to achieve, participated actively in the rapid institutional analysis and have signed up to the letter of commitment.

7. Key capacity development needs of focus institutions

For both focal institutions capacity strengthening areas were identified through a process of rapid institutional analysis, using the following process:-

A. Definition of "core business areas"
B. SWOT Analysis in relation to national agricultural policy and plans
C. External perspectives from stake-holders, as a means of checking internal perspective on strengths and weaknesses,
D. Defining priority areas for capacity strengthening informed by the above steps, and mapping these against capacity strengthening methods proposed in the implementation plan,
E. Listing issues relating to sustaining the benefits of SCARDA and related strategies.

Using this approach, the priority areas for capacity strengthening, were provisionally identified by the representatives of each focal institution. After the workshop these priorities were further refined through re-visiting the SWOT analysis and suggestions from meetings with a selection of external stakeholders.

NRDC

Research Management:
Strengthening of capacity in the following areas:-

i. Resource mobilisation
ii. Development of linkages and partnerships with key stakeholders, particularly the private sector and also key public institutions (e.g. ZARI),
iii. Management of the existing assets, in particular the college farm; enhancing its image, and effectiveness as both a training and research resource,
iv. Development and coordination of an (applied and adaptive) research programme complementing that of the other research players
v. Capacity in planning, monitoring and evaluation.

Quality of Science

i. Up-grading technical and research capability of staff across a range of key technical areas linked to current and planned training and research plans,

Professional Development
Develop and strengthen capability of staff in the main departments in:-

i. Research proposal writing,
ii. Communication of research results to different audiences
iii. Research and extension methodologies

UNZA

*Research Management***:**
Strengthening of capacity in the following areas:-

i. Resource mobilisation for problem solving research
ii. Strengthening of research and development linkages and partnerships (between departments of SOAS, with other UNZA schools and Depts and beyond UNZA),

Quality of Science

i. Up-dating of current staff in "state of the art" research methodologies and biometrics for agricultural research and development,
ii. Training in relevant laboratory techniques for staff and technicians,
iii. Data management and associated IT skills (with a particular focus on e-learning approaches and methods),
iv. "Re-tooling of staff in their key areas of specialisation.

Professional Development
Develop and strengthen capability of staff in the main departments in:-

i. Communication of research results to different audiences
ii. Research proposal writing,
iii. Soft system skills relating to research and development,

8. Evidence for sustainable HR policy beyond SCARDA

Senior managers and staff at the UoZ-SOAS and NRDC have identified the potential of SCARDA to enhance the quality of the services they provide to their clients and to increase the potential for income generation. This will be achieved through the joint development and

delivery of new training courses and the anticipated acquisition of additional resources as a result of improved skills in proposal writing. At the same staff motivation is expected to increase and this should lead to improve staff retention.

9. Schedule of proposed activities

The proposed activities and estimated costings are shown in Table 3 below.

10. Activities for immediate implementation ['quick wins']

Activities which can begin almost immediately after programme implementation starts are:

- Conduct the next stage of the Institutional Analysis
- Match individual staff to proposed capacity strengthening activities
- Identify short courses that can be run in early 2008
- Embark on tracer studies (ANAFE)

Consultants : Dr Mick Mwale and Dr Alistair Sutherland

Table 3: University of Zambia & Natural Resources Development College Budget

INSTITUTIONS		**UOZ+NRDC**			**TOTAL**
		Yr 1	Yr 2	Yr 3	
Research management	No	£	£	£	
Core course delivery	65	35,000	35,000		
Post-training support			10,000	10,000	
Specific short courses	30	15,000	20,000		
Reflective learning workshops			15,000	15,000	
Mentoring	7	3,000	4,000	2,000	
Attachments/Exchanges	17	7,000	10,000	5,000	
TOTAL		**60,000**	**94,000**	**32,000**	**186,000**
Capacity to do Quality Research					
Biotechnology, Laboratory technology, Research methods, Horticulture, Entomology, Plant Breeding					
Animal Science	2	4,000	14,000	4,000	
Resource Conservation					
Economics	2	4,000	14,000	4,000	
Soil & water management,	2	4,000	14,000	4,000	
Crop husbandry	2	4,000	14,000	4,000	
Farm management	2	4,000	14,000	4,000	
Short course					
Technicians upgrade	8	18,000	18,000		
Mentoring	10	2,500	5,000	2,500	
TOTAL		**40,500**	**93,000**	**22,500**	**156,000**
Professional skills development					
Short courses	60	15,000	30,500	25,000	70,500
Biotechnology, Communication skills, IPR management, Quality Assurance					
Website design management, Equipment maintenance, Data management					
TOTAL		**15,000**	**30,500**	**25,000**	**70,500**

BURUNDI & RWANDA

Focal Institutions:

Institut des Sciences Agronomiques du Burundi
Institut des Sciences Agronomiques du Rwanda

1. Background

Burundi and Rwanda are both small land-locked countries with high population densities and economies that are highly dependent on agriculture. Infrastructure is severely constrained following a long period of civil conflict and, in Burundi, low levels of conflict continue to persist. Both Burundi and Rwanda have prioritised agriculture as a sector for investment in order to generate economic growth. In Rwanda, the Support Project for the Strategic Transformation of Agriculture (PAPSTA) began in mid-2006 and is due to continue until March 2013. The initiative, which contributes to the country's Economic Development and Poverty Reduction Strategy, is funded largely through a loan from the International Fund for Agricultural Development and DFID will also make a substantial contribution. Rwanda is the first country in Africa to formally endorse its commitment to NEPAD's Comprehensive African Agricultural Development Programme (CAADP) by signing a Rwanda CAADP Compact. This is a consensus document specifying commitments by the government of Rwanda, the private sector, and development partners to take a series of actions to ensure successful implementation of the EDPRS/PSTA agenda.

The World Bank and DFID are also providing support in the area of Science Technology and Innovation and DFID is likely to contribute funds to a Science, Technology and Innovation Commission. In Burundi, plans for support to the agriculture sector are less advanced due to the continuing instability in the country.

Rural poverty in Burundi and Rwanda remains high and a recent World Bank report[4] emphasises the beneficial poverty impacts of producing staple food crops and livestock. This is consistent with the analysis used to develop the current strategy of the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA).

2. Institutional mandates

The Institut des Sciences Agronomiques du Rwanda's (ISAR) is the primary agricultural research and development organization in Rwanda. ISAR's participation in PAPSTA from 2008 will focus primarily on 'Research development and support to agriculture intensification' (sub-component 2.4 under 'Pilot Activities through Innovative Models'). Within this sub-component, ISAR will contribute to participatory research and farmer field schools. ISAR will also continue its work for PAPSTA on research and training for rice growers on the System for Rice Intensification in marshland areas.

[4] World Bank (2007) Promoting Pro-Poor Agricultural Growth in Rwanda: Challenges and Opportunities.

In Burundi, the Institut des Sciences Agronomiques du Burundi (ISABU) plays a similar role to ISAR in Rwanda. ISAR and ISABU conduct research through national commodity-based research programmes. The programmes are hosted by stations located in different agro-ecological zones carry the mandate of commodities in those zones. The staff are therefore attached to the national programmes and often operate across stations depending on the commodities. Similar commodities or programmes are aggregated into units such as cereals, roots and tubers and horticulture.

The National University of Rwanda (NUR) and the University of Burundi (UdB) have faculties of agriculture and are the main sources of training for new agricultural graduates.

3. Structure

At ISAR, the secretariat has a Director and two deputy directors; Deputy Director Research (DDR) and Deputy Director Finance and Administration (DDFA). It comprises of fifteen research stations distributed in three agro-ecological zones namely highland, semi-arid and mid-land. Highland agricultural research centre is based at Ruhengere, semi-arid agricultural research is based at Karama, mid-land agricultural research centre is based at Rubona, and the livestock research centre is based at Nyagatare.

At ISABU, the secretariat has a Director and three Deputy Directors in charge of departments namely; department of crop and animal production, environmental science and farming system and finance and administration. Each department comprises of national programmes housed in the seven research stations distributed in three agro-ecological zones namely; highland, mid-land and low land. Gisozi and Mahwa research stations are located in the highland and deal with a mixture of crops, livestock and biotechnology; Moso and Karuzi are located in the midland and mainly deal with crops; Murongwe representing a unique mid-land and riverine environment; and Imbo and Rukoko are located in the lowland and these deal with a mixture of crops and livestock.

The department of production comprises of nine programmes organized according to commodity groups. These are: cereals, roots and tubers, legumes, crop protection, cash and industrials crops, germplasm conservation, animal production, horticulture, and food science and technology. Environmental sciences and Farming systems comprises of natural resource management, rural and socio-economics, technology transfer, documentation and biometrics and laboratory analysis for soil, plant and animal products. The finance and administration department manages the human resources and financial oversights at the secretariat, six research stations and thirteen centres attached to the research stations.

Overall the hierarchical structure of ISAR and ISABU comprises of:

- Secretariat with Deputy Directors who report to the Director
- The station heads, who reports to the respective Deputy Directors.
- Unit heads who report to the station heads
- Programme heads who report to the unit heads
- The scientists who report the programme heads.

The Faculties of Agriculture in the National University of Rwanda (NUR) and the University of Burundi (UdB) are headed by the Deans who report to central administration. Below the Deans are Heads of Departments. In NUR, the Faculty of Agriculture based in Butare is the unit while in UdB, it is FACGRO based in Bujumbura.

4. Major Programmes and partnerships

There are several other on-going initiatives related to the intended SCARDA interventions. These include the Senior Scientists programme, human resource capacity building by CGIARs, and bilateral arrangement for human resource capacity building.

Senior Scientists Programme. Under the Rural Sector Support Fund in the Ministry of Agriculture, the Government of Rwanda initiated a Senior Scientists programme to provide technical backstopping of ISAR in areas where human resource capacity was weak. This was intended to be a temporary arrangement as ISAR trains its own people in these areas. The Senior Scientists are expected to:

- Lead research in programmes where they are attached
- Develop research proposals to source funds for research
- Train and mentor the junior scientists with respect to data analysis and publications
- Organise fora for scientific interaction and dissemination of knowledge and technologies

CGIAR initiative to build capacity. There are several initiatives by CGIARs centres such as IITA, CIAT and Bioversity and ASARECA-PRAPACE/CIP to support research in ISAR, ISABU and also provide scholarships for graduate training of scientists in those NARIs. The interests of the CGIARs are however attached to specific commodities. Some of the commodities of interest include banana, legume, roots and tubers, and cereals. Along their research programmes, IITA, CIAT, Bioversity provide scholarships for MSc and PhD with aim of developing local capacity. For example, under the CIALCA project, a consortium of CIAT, IITA, Bioversity and Belgian universities and ISAR, ISABU and IRAZ, 8 MScs and 7 PhDs are being trained for Rwanda and 2 PhDs for Burundi. Six of the MSc students are in the Agroforestry and Soil Management programme at NUR and the other two are at the Jomo Kenyata University of Agriculture and Technology (JKUAT). The PhDs are being trained in Belgium. To complement the capacity in NUR in Rwanda, CIALCA hired a senior scientist to assist in the teaching and supervision the MSc students on the newly established Masters programme. Under the same arrangement, two senior scientists have also been hired to backstop ISAR and ISABU. In Burundi two MSc are being trained with support from ASARECA/IPGREN and another five through other independent initiatives.

Some of these on-going initiatives informed the proposed intervention models explained above. It is therefore important that SCARDA taps into these experiences and resources for lesson learning and for complementarity. Table 4 shows opportunities that exist by collaborating with existing initiatives.

Table 4 : Complementary on-going initiatives

Intervention Area	Potential partners	Description of related interventions
MSc and PhD training	CIALCA, ILRI, NUFFIC, ICIPE, ASARECA/IPGREN	• Providing technical support, scholarships and supervision of students • ICIPE through APHIS programme supporting NUR to develop an MSc programme in crop protection
Professional Development	CIALCA, National Governments, NUFFIC	Technical support and mentorship to ISAR, ISABU and the universities

Research management	None	Unique to SCARDA
Communication and technology packaging		

For MSc training and professional development, SCARDA will tap into existing experiences and complement ongoing efforts especially with regard to local supervision of students. ***The ongoing initiatives basically focus on the banana and legume cropping systems***.

5. Rationale for participation in SCARDA

The human and infrastructural capacity for agricultural research in Burundi and Rwanda has been seriously affected by the recent civil strife in these countries. The governments of both countries have recognised the need to rebuild this infrastructure and have given priority to capacity strengthening for agricultural research and development in their national agricultural strategies. There is good scope to strengthen linkages between the national agricultural research institutes and university faculties of agriculture. There are several other agricultural initiatives in Rwanda and, to a lesser extent, Burundi to which SCARDA can provide complementary inputs. These include the training initiatives summarised above and the DFID-funded 'Research into Use' programme which is due to launch activities soon in Rwanda.

6. Research capacity needs.

Table 5 presents the existing human resource capacities in ISAR and ISABU respectively. These were compiled as a basis for prioritisation for Masters training, but are also appropriate for short courses. It is important to note that a unit in the case of ISAR comprises of several programmes (commodities). In Rwanda, ISAR and the National University of Rwanda (NUR) were analysed separately, while in Burundi ISABU and the University of Burundi (UdB) were jointly analysed. The main difference between the two countries is that in Burundi, both ISABU and UdB had discussed their priorities and interests prior to the consultants' visit, while in Rwanda, no such intra and inter-institutional discussions had earlier taken place. In this context, Rwanda, particularly ISAR applied a ten-point scoring system (1-10 where 10 is most important) for each programme based on its perceived national importance and existing human resource capacity. In Burundi, this had been predetermined based on their earlier discussions and a scoring system was not necessary.

The need to enhance the skills of agricultural technicians was also identified as a priority area for short-term, capacity strengthening in ISAR and ISABU. Skills areas that require up-grading include equipment maintenance; molecular and microbiological diagnostics; analysis of animal feeds; and post-harvest and value addition.

Table 5: Existing human resource capacity in various units of ISAR and ISABU

Rwanda (ISAR)						**Burundi (ISABU)**			
Unit	**Importance**	**Existing capacity**			**Score**	**Programme**	**Existing capacity**		
		PhD	**Masters**	**Bachelors**			**PhD**	**Masters**	**Bachelors**
Cereals						Soil and fertility management	1	1	2
Cereals	V. important	-	1	9	8	Water management	-	-	1
Legumes	V. important	-	2	3	6	Innovation and Technology dissemination	-	-	5
Roots & tubers	V. important	-	2	4	6	Socio-economics	-	1	2
Livestock	V. important	-	-	9	9	Biometrics	-	-	1
Income commodities						Crop protection	-	3	1
Horticulture	Important	-	4	5	8	Animal production	-	2	1
Perennial crops (coffee & Tea)	Important	-	1	3	4	Cereals	-	2	6
Sericulture	Important	-	-	1	4	Legumes	-	-	2
Agro-forestry	Important	2	4		2	Roots and tubers	1	1	5
Technical areas						Cash and industrial crops	-	-	6
Biotechnology	Important	-	-	3	6	Horticulture/fruits	-	2	1
Crop protection	Important	-	2	1	8	Agroforestry	-	-	2
Post-harvest	Important	-	1	2	7	***Totals***	**2**	**12**	**35**
Socio-economic (Technology transfer)	Important	-	2	6	7				
Soil and water management	Important	-	6	4	2				
Biometrics	Important	-	-	1	8				
Totals		**2**	**25**	**51**					

Current state of graduate training. The long-term strategy for capacity building in the Rwanda NARS is to strengthen the capacity of NUR to provide quality graduate training (MSc and PhDs). With the support of NUFFIC (Netherlands Government), NUR has recently mounted an MSc programme in Agroforestry and soil Management. It is two-years old and the first graduates of the programme are expected at the end of this year (2007). NUFFIC also supports sandwich MSc and PhD based in the Netherlands. The NUFFIC support is designed to ensure that the students and their Dutch supervisors while in Rwanda also teach on the Masters programme because of the limited capacity at NUR to run such programmes. In addition, a consultant has been hired to support the programme. This arrangement fits the proposed mentorship programme under SCARDA described later.

Capacity gaps. NUR is making efforts to build its capacity for graduate training and in this regard, the Faculty of agriculture has 19 out of its 31 staff training for MSc and PhDs. Further, many of the available staff hold Masters degrees and are looking for PhD training opportunities.

The Faculty of agriculture recognized the need to mount other MSc programmes but it is limited by the present capacity. For example, an MSc in crop protection, one of the priority programmes has been developed but cannot be implemented due to lack of capacity. Whereas ISAR proposes that NUR establishes Masters programmes in crop protection, plant breeding and animal nutrition as priority, the capacity in NUR in these disciplines is limited as shown in the Table 6 below.

Table 6: Existing capacity in priority disciplines for MSc training in NUR

Programme/Discipline	**Staff available at NUR and ISAR**
Crop protection	3 PhD entomologists and pathologists in ISAR
Animal Nutrition and aquaculture	4 PhDs in Aquaculture and 2 MSc in animal nutrition, 1 PhD under training and 1 BSc.
Plant breeding	Currently entirely supported by foreign staff (expatriates)
Agricultural Extension	None
Laboratory technicians	1 foreign staff

Although agricultural extension is considered a critical component of the university training and research programme it has no staff at all. This is partly the reason the faculty cannot effectively implement their outreach programmes. Lack of laboratory technicians is another critical gap for research and training. While Rwanda has an agricultural college for higher diploma, these mainly serve as field technicians and not necessarily laboratory technicians. Training for laboratory technicians is a priority for NUR under SCARDA.

SCARDA interventions. For NUR to build its capacity to offer the MSc programmes demanded by ISAR, it prioritized the under-listed areas for capacity building under SCARDA. NUR preferred to have at least one MSc trained in each of the following areas: plant breeding; biotechnology; and animal breeding

Capacity for FACGRO, UdB

Before the civil strife, FACGRO had three Masters programmes which have since stopped due to lack of staff. The three programmes were: Agricultural planning and management, tropical crop production and crop protection. The staff shortage further threatens the undergraduate programme. Currently FACGRO cannot adequately teach and supervise their students and, as a short-term measure, has requested visiting scientists to strengthen its undergraduate programme. Table 7 below shows the existing human resource capacity at FACGRO.

Table 7: Current human resource capacity in FACGRO, UdB

Department	Qualifications	Permanent staff, 2007	Part-time staff, 2007	Total 1994-1995	Total 2007
Crop Science	PhD	1	3	6	4
	MSc	0	2	0	2
	BSc	1	0	7	1
Animal Science	PhD	0	0	4	0
	MSc	1	1	2	2
	BSc	1	0	1	1
Rural Economics	PhD	2	1	3	3
	MSc	2	0	1	2
	BSc	0	2	5	2
Environment and Ecological management	PhD	1	6	2	7
	MSc	1	1	0	2
	BSc	0	0	4	0
Technology Development	PhD	0	1	2	1
	MSc	0	0	1	0
	BSc	0	0	5	0
Total		***10***	***17***	***43***	***27***

7. Schedule of proposed activities

SCARDA will support the NARIs and universities and strengthen the interaction between them. The interaction between the two with regard to SCARDA interventions is illustrated in the models shown in Figures 1 and 2 below. In order to enhance the scope for impact, support for the NARIs will be targeted on specific research stations. In Rwanda, Rubona was selected because it houses four of the targeted units namely; *cereals, horticulture, biometrics and crop protection.* In addition, it is in close proximity to NUR. Songa was selected because it is the national station for livestock and is also in close proximity to NUR and Rubona.

In Burundi, most research stations are in close proximity to Bujumbura and share some infrastructure. In this case, the choice of stations was largely guided by the disciplines prioritized and where such work is based. Therefore, focus will be in the three agro-ecological zones. Gisozi and Mahwa will serve for highland crops, animal and biotechnology; Rukoko and Imbo will serve for livestock and low altitude crops respectively as well as irrigation. Moso, will serve for the mid-altitude crops. Figures 1 and 2 illustrate the intervention models for Rwanda and Burundi respectively.

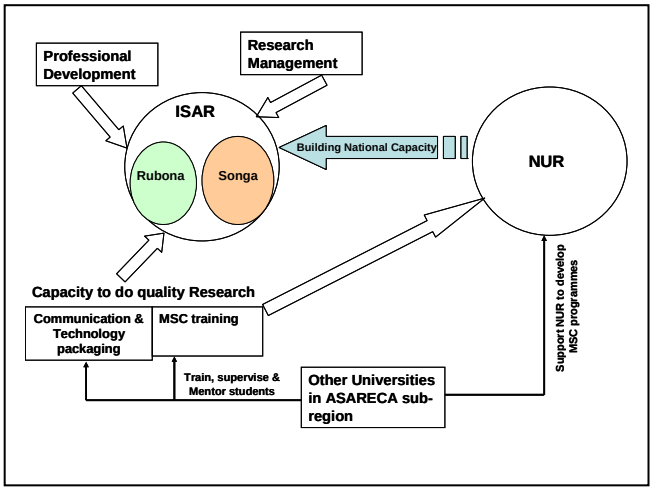

Figure 1: SCARDA intervention model for Rwanda

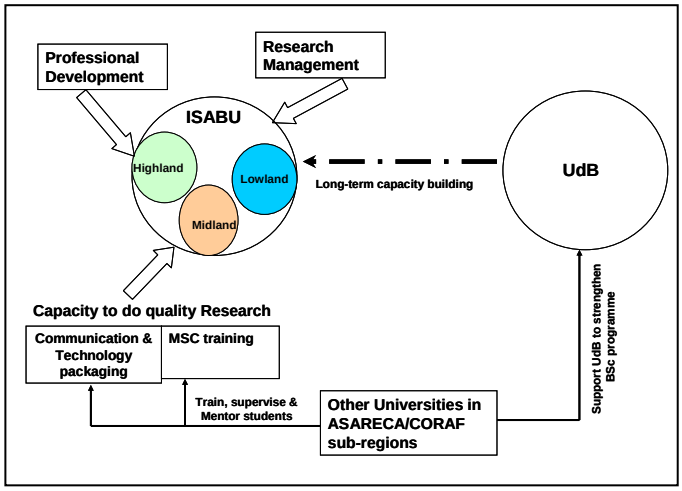

Figure 2: SCARDA intervention model for Burundi

The three thrusts, i.e. professional development, research management and building capacity to do quality research will be targeted at the focal research stations and liked to the universities via the mentorship programme. *It is envisaged that the supervisors of the Masters students will also be mentors for both the NARIs and universities*. The models for Rwanda and Burundi are similar with the exception that in Burundi, all the MSc trainees will come from ISABU. In Rwanda, some of the Masters trainees will be from NUR and the mentorship programme will also involve supporting NUR to develop a few Masters programmes. Operationalisation of the three intervention thrusts is explained below.

Building capacity for quality research

This thrust area has three main interventions:

- Masters training for both ISAR and NUR in Rwanda and ISABU in Burundi
- Technician training
- Enhancing communication and technology packaging.

Training will be in universities in the ASARECA region or, where appropriate, elsewhere. A *sandwich* approach will be used where the students will conduct their research in their home countries.

The MSc training will be linked to the *Senior Scientists mentorship programme* where the Senior Scientists will be the supervisors of the students. In this way, the mentorship programme will serve to build capacity in the targeted NARIs and universities. Therefore, the Senior Scientists (also supervisors) will be required to stay in Burundi and Rwanda for a period of 3-4 months or more as need may arise. Mentors working in Burundi should be fluent in French. Mentors will undertake the following tasks:

- Supervise the students and help them to set-up and conduct quality research within their home institutions;
- Provide technical backstopping and mentor the other staff within the targeted research programmes;
- Teach in the universities (NUR/UdB) whenever necessary or develop and conduct short courses in their areas of specialty. It is envisaged that the short courses may benefit professionals in the wider NARS;
- Support NUR to develop MSc curricula in preferred disciplines such as crop protection, and animal nutrition and aquaculture for the case of Rwanda and for Burundi, they will support the undergraduate programme.

The feasibility of supporting the numbers of MSc studentships discussed with ISAR, ISABU, NUR and UdB will be reviewed during the next stage of the institutional analysis in early 2008. The consultants identified several issues and challenges for implementation which they outlined in their full report. The challenges include: high staff turnover; a history of delays in completion of postgraduate courses by students; the practicalities of senior scientists spending long periods in-country. For these reasons, SCARDA will assess other options for providing support to quality science. For example, the long-term sustainable strategy for capacity building is for the universities in the respective countries to develop Masters programmes to continuously supply the human resources to the research system. SCARDA may support the development of curricula for Masters programmes in crop production (Agronomy), crop protection and animal nutrition at the National University of Rwanda (NUR). Table 8 provides information on the priorities for MSc training.

Table 8: Priority MSc training for ISAR and ISABU

Priority training for ISAR						Priority training for ISABU		
Unit	**Score**	**Current MSc**	**Projected MSc in 3 yrs**	**Number to train**	**Speciality**	**Programme**	**Number to train**	**Specialty**
Livestock	9	-	7	2	Breeding and nutrition	Soil and fertility management	1	Soil Fertility
Cereals	8	1	8	1	Plant breeding	Water management	1	Irrigation
Crop Protection	8	1	3	1	Crop protection	Innovation & Technology dissemination	1	Agricultural Extension
Biometrics	8	-	2	1	Biometrics	Socio-economics	1	Agricultural economics
Horticulture	8	4	7	1	Production	Biometrics	1	Biometrics
Totals		**6**	**27**	**6**		Crop protection	1	Virology/pathology
						Animal production	1	Animal breeding
						Cereals	1	Plant breeding
						Legumes	1	Agronomy
						Roots and tubers	1	Biotechnology
						Total	**10**	

The second intervention is the provision of *short courses for field and laboratory technicians* to enhance their skills to a level which will enable them to contribute effectively to research and training programmes.

The third intervention within the thrust of building capacity to do quality research, targets *enhancing capacity for communication and appropriate technology packaging* in the NARS. For this, *short-term training programmes* will be conducted combining participants from the NARIs, universities and other partners such as extension and NGOs. Service providers in this area will be sourced from within and outside the ASARECA sub-region. Discussions are also taking place with the Research into Use programme to explore the potential for support to ISAR in the establishment of a new Information unit.

Research Management

Intervention for enhancing capacity for research management will target the selected focal research stations and their associated leadership structures. Senior staff will be involved in the core course on integrating innovations systems approaches into agricultural research management.

Participants for other specific courses will include heads of units, heads of programmes, heads of stations and some secretariat staff including the deputy directors. This choice is based on their roles and responsibilities as described in Table 9 below.

Table 9: Anticipated participants in the research management intervention

Manager	**Roles/responsibilities**	**Anticipated number**	
		ISAR	**ISABU**
Heads of units	Coordinate programmes under their units in terms of administration, finance, planning and M&E	5	-
Heads of programmes	• Lead in setting the research agenda • Lead in developing research proposals and sourcing for funds • Supervise and coordinate research activities • Report to the unit heads •	11	13
Head of stations	• Provide financial oversight of all the activities in their programmes – the Authority to incur expenses • Manage human resources and facilities in their programmes	2	7
Secretariat managers	• Provide overarching guidance and report to government and other stakeholders • In ISAR these include: Deputy Director-Research, head Planning and head of partnerships and resource mobilisation. In ISABU, these will include: Head the three departments of crop and animal production, environment sciences and farming systems and Finance and administration	3	3
Totals		**21**	**23**

Based on the roles and responsibilities of the managers, it was emphasised that research management training should include:

- Finance management

- Human resource management
- Reporting/communication to various stakeholders
- Networking and partnerships
- Strategic planning and coordination
- Monitoring and evaluation

Professional development

Professional development will involve a series of *short-term training courses* targeting heads of programmes and scientists at the focal research stations. Other partners such as extension and farmer organisations will also be involved. Skills emphasized in this area include:

- Proposal development and scientific writing
- Team building
- Partnership development and management
- Participatory research methods
- Conflict management
- Communication skills for different stakeholders
- Interpretation and integration of policy in agricultural research and development

Estimated costings for the proposed activities are shown in the consolidated budget for the ASARECA sub-region in Table 10.

<u>Consultants</u>: Dr Paul Kibwika and Dr Patrick Okori

Table 10: Institut des Sciences Agronomiques du Rwanda & Institut des Sciences Agronomiques du Burundi

		ISAR/NUR					ISABU/UDB			
	No	Yr 1 £	Yr 2 £	Yr 3 £	**TOTAL**	No	Yr 1 £	Yr 2 £	Yr 3 £	**TOTAL**
Research management										
Core course training	3	10,000								
Core course delivery	60	50,000	20,000			20	20,000	15,000		
Specific courses e.g. M & E	45	20,000	20,000	5,000		35	16,000	16,000	4,000	
Follow-up activities	60		10,000	10,000		20		5,000	5,000	
TOTAL		**80,000**	**50,000**	**15,000**	**145,000**		**36,000**	**36,000**	**9,000**	**81,000**
Capacity to do Quality Research										
Livestock Breeding and Nutrition	3	6,000	21,000	6,000		1	2,000	7,000	2,000	
Plant Breeding (Cereals)	2	4,000	14,000	4,000		1	2,000	7,000	2,000	
Crop Production	1	2,000	7,000	2,000		1	2,000	7,000	2,000	
Biometrics	1	2,000	7,000	2,000		1	2,000	7,000	2,000	
Horticultural production	1	2,000	7,000	2,000						
Soil fertility						1	2,000	7,000	2,000	

Water management						1	2,000	7,000	2,000	
Agricultural extension						1	2,000	7,000	2,000	
Agricultural Economics						1	2,000	7,000	2,000	
Legume agronomy						1	2,000	7,000	2,000	
Biotechnology (roots & tubers)	1	2,000	7,000	2,000		1	2,000	7,000	2,000	
Short courses for technicians	50	30,000	30,000			40	25,000	25,000		
Other *short courses*	25	10,000	15,000			15	15,000	5,000		
Support to commodity chains		4,000	12,000							
Mentoring researchers	9	20,000	30,000	20,000		10	22,000	33,000	22,000	
TOTAL		**82,000**	**150,000**	**38,000**	**270,000**		**82,000**	**133,000**	**42,000**	**257,000**
Professional skills development										
Short courses	150	45,000	80,000	30,000	155,000	130	40,000	70,000	25,000	135,000
Communication, IPR management, Negotiation, Data management, Equipment maintenance	,									
TOTAL		**45,000**	**80,000**	**30,000**	**155,000**		**40,000**	**70,000**	**25,000**	**135,000**

MALI

Focal Institution:

Institut d'Economie Rurale

Background

A visit was made to Mali from 19-23 November to make a preliminary assessment of capacity development needs of the Mali NARS, and to obtain a formal letter of collaboration from the Focal Institution, l'Institut d'Economie Rurale (IER). Both objectives were met due to the excellent cooperation of the Director General of IER (Dr Bino Teme), his staff and other people met across the NARS (Ministries of Agriculture and Livestock, NARS co-ordination unit, producer representatives, University, and Central Veterinary Laboratory). In addition to the findings of this institutional analysis, the results of the scoping study which was undertaken in May 2007 are also taken into account.

Mali is a landlocked country of 1.2 million km^2 spanning several agro-climatic zones, between the cotton producing south and the dessert in the North. Other crops include millet, sorghum, maize, rice (i.e. mostly irrigated or flood-plain production at certain points along the river Niger), fonio, beans, and horticultural produce some of which exported to Europe (e.g. mangoes). In addition, livestock production plays an important role (e.g. cattle, sheep, goats), with exports mainly taking place to neighbouring countries.

Mali has undergone significant changes during the 1980s and 1990s as a result of structural adjustment and decentralization policies. On the economic side these have led to market liberalization, reduction of public expenditure, and supply side measures (e.g. elimination of input subsidies). Articles on decentralization have been included in the 1992 Constitution of the 3rd Republic, which led to several related laws and decrees passed between 1993 and 1996.

The Master Plan for Rural Development of 1992 has been updated in 2000 with the assistance of FAO/UNDP and backing from World Bank, European Union, French Cooperation, Germany and Netherlands. The Master Plan is based on principles such as decentralization, participation and strong involvement of different stakeholder groups (e.g. producer organizations).

Mali's NARS

Within this context, the National Committee of Agricultural Research (CNRA) was created in 1993 following a restructuring of Mali's NARS, which includes the following elements[5]:

- Institut d'Economie Rurale (one of four SCARDA Focal Institutions for the CORAF/WECARD region);
- Central Veterinary Laboratory (LCV);
- University of Bamako, (i.e. Faculty of Science and Technology, and Faculty of Languages, Arts, and Human Sciences); and
- Two 'Grandes Ecoles', i.e.
    - Institut Polytechnique Rurale (IPR) de Katibougou, and
    - Institut de Formation et de Recherche Appliquee (IFRA).

[5] All of these organisations have been visited except the two 'Grandes Ecoles'

The CNRA has the task of overall coordination of Mali's agricultural research and comprises three working commissions, namely,

- Scientific Commission – in charge of vetting research proposals for their scientific content;
- Financial Commission – in charge of financial research coordination and selection of proposals based on financial consideration.
- National Users Commission (CNU), which includes producers and other private sector representatives, whose task is to ensure that research is demand led. Each of the regions has its own Regional Users Commission (CRU).
- In addition, there are Regional Agricultural Research and Extension Councils, which have the role of identifying and prioritising regional research proposals.

CNRA annual expenditure on research projects is of the order of 800 million to 1 billion FCFA (about $1.6 million to $2 million). Funds come from the Government, World Bank / IDA loan, and the French Cooperation. The projects are selected through competitive tenders, and the next round of proposal selection is planned for December 2007.

During the scoping study in May 2007 the CNRA expressed the following needs for capacity strengthening measures: contract management including legal and administrative management aspects; computerised management system; identification of funding sources; monitoring and evaluation of member organisations and programmes.

The Focal Institution (IER)

The Institut d'Economie Rurale (IER) has been created in 1960 and is Mali's principal agricultural research organisation. Following its restructuring in 1994, the IER has six regional research centres, nine stations, and 13 sub-stations across the country. The annual budget of the Institute is of the order of 5 billion FCFA (i.e. approximately US$ 10 million), with funds coming from the Malian Government, World Bank (PASAOP programme), ADB, USAID, France, Netherlands, and Switzerland. In addition, collaborative agreements are made with national and international partners on specific projects.

In 2007, the IER has the following staff structure: Total staff – 829, researchers – 285,

female researchers - about 20. The lack of recruitment of young researchers as a result of public sector recruitment stops has been raised as a concern. Many researchers are due to retire within the coming 5 – 10 years, potentially leading to a loss of expertise in the institute.

During recent years, the IER has introduced two Access data bases called SAC (Suivi/ appui/ conseil, or monitoring/ support/ advise), which are tools for (a) the management of the organisation, and (b) project management. This has taken place as part of capacity strengthening measures funded by the Netherlands. In addition, this included training by KIT on issues such as gender and diversity.

IER has 17 research programmes covering rain-fed crop production, irrigated crop production, animal production, forest resources, fisheries resources, natural resources management, value chains (economie des filieres) and agricultural mechanisation. The institute uses a multi-stakeholder approach, including principles such as participation, diversity, and environmental sustainability.

In particular, capacity strengthening needs of IER have been expressed in the following areas: Biotechnology and biosafety, ICT including website updating, biometrics, preparation of scientific publications / extension fact sheets, marketing of research results and the institute itself, and refresher courses on selected technical topics to undertake quality research (These are shown in Table 11 of the full report on Mali). In particular, this would involve refresher courses and workshops, the details of which would have to be agreed as part of the institutional analysis.

It has been stressed that measures strengthening human resources capacity ought to be accompanied by relevant equipment (e.g. laboratory equipment, computers), materials, and up-to-date computer software. Without these there is a risk that those who have been trained or undergone further education may not be able to apply their newly acquired knowledge.

In sum, the IER appears to be well placed for the role of Focal Institution of the SCARDA programme. In addition to their own capacity strengthening needs, on certain topics they can also play the role of service provider for other programme partners in Mali or within the CORAF/WECARD region.

Other NARS Stakeholders

In addition to IER, the Central Veterinary Laboratory (LCV) and the University's FAST and FLASH faculties have been visited. The laboratory seems well organised and competitive within the region as far as the production and sale of animal vaccines are concerned. The LCV management has expressed the following capacity needs: renewing of laboratory equipment and some materials, plus training related to the production of scientific publications, monitoring and evaluation, laboratory waste disposal, quality assurance, and communication.

Contrary to IER and LCV, the University faculties appear relatively new in agricultural research and more in need of capacity strengthening measures. These include training and further education in areas related to: Management of human and financial resources, agricultural research approaches (e.g. participatory, multi-stakeholder innovation systems), and specific topics (e.g. biotechnology / biosafety, IPR management, quality assurance, negotiation skills, communication, packaging of research outputs), and a range of technical areas to undertake quality research. In that context, University staff are likely to require a combination of capacity strengthening measures to be identified in detail as part of the institutional analysis at the beginning of the project, and during the course of tracer studies.

It has not been possible to visit the Institut Polytechnique Rurale (IPR) de Katibougou (i.e. the Agricultural College of Katibougou), as planned. Nevertheless, it should be envisaged that the college will also benefit from some SCARDA activities.

Confirmation of the priorities identified during the preliminary analysis will be done early in 2008. Activities which have been identified for immediate implementation are shown in Table 11. Indicative budget figures have been allocated to the main SCARDA components in the consolidated budget Table 12.

Consultant: Mr Ulrich Kleih

Table 11: Proposed activities that can be started in the near future:

Activity	Benefiting institutions	Timing (earliest)
Regional Learning Platforms (Collèges d'Utilisateurs) involving producers, researchers, extension staff and NGOs to identify and prioritise local agricultural research needs. These platforms are led by local producer organisations and based on participatory methods, which the stakeholders are familiar with. Similar platforms have been organised about two years ago, and the need to organise another round was expressed by IER management. The steps and exercises involved in the platforms will be documented so that they can be shared with other SCARDA partners.	Institutions belonging to the CNRA (National Committee of Agricultural Research), including regional producer organisations and researchers (e.g. IER). In addition, Gvt. extension staff and NGOs will benefit from better identified research priorities. It is envisaged that this experience can be shared by other researchers from Mali (e.g. University) and other countries of the CORAF region (e.g. Congo).	Feb. / March 2008
Preparation of a communication strategy including aspects of dissemination of research outputs (scientific publications and extension fact-sheets), website creation and maintenance, use of other media, professional networking, and marketing of research institutes and their outputs.	All members of Mali's NARS, i.e. CNRA, IER, University, Veterinary Laboratory, Institut Polytechnique Rural (IPR) de Katibougou.	Early 2008
Applied workshop on the production of scientific publications	IER, University, Veterinary Laboratory	Feb. / March 2008
Applied workshop on the production of fact sheets for extension staff	IER, University, Veterinary Laboratory	Feb. / March 2008
Training in website creation and updating. The training will be applied and lead to a tangible output.	Staff from IER, and potentially University, Veterinary Laboratory, and IPR.	Feb. / March 2008
Training course in biotechnology and biosafety	IER and University	Feb. / March 2008

It can be envisaged that this course will be the first in a series of courses (i.e. beginners, intermediate, and advanced levels) to be conducted in 2008 and 2009.		
Networking with researchers of the region. This may be through up-to-date websites or regional meetings.	IER, University, Veterinary Laboratory,	Feb. / March 2008

NB: It is recognised that due to time and staff constraints it is unlikely that all of these activities can be undertaken in February and March 2008. For a start, it may be appropriate to envisage the following two activities:

- Support to the organisation of Regional Learning Platforms;
- Applied training in website creation and maintenance.

In addition to the organisations indicated, some workshops may also be attended by members of the CNRA (National Committee of Agricultural Research) coordination unit and the Institut Polytechnique Rural (IPR) de Katibougou.

Table 12: Institut d' Economie Rurale

INSTITUTIONS		**IER**			
		Yr 1	Yr 2	Yr 3	**TOT**
	No	£	£	£	
Research management					
Short courses	20		6000		
Financial resources management	20		6000		
Research/ prog management	20	10,000			
Stakeholder analysis	20		5000		
Innovation systems	20		6000		
Research/extension/producer linkages	20			6000	
Research commercialization & marketing	20			6263	
Research strategy planning	3	25,000	25,000		
M&E, Impact Assessment	20	10,000			
Commercialization of training unit					
TOTAL		**45,000**	**48,000**	**12,263**	**105,263**
Capacity to do quality research					
Biotechnology; QTL mapping, MAS	20	10,000	10,000		
Bioinformatics					
Biosafety and risk evaluation	20	12000			
Techniques plant breeding					
Crop protection, IPM	2	3000	11000	8000	
Crop modeling					
Animal health	2	3000	11000	8000	
Post harvest technologies, value addition					
Participatory research methods & PVS	20	12000			
Biodiversity/ Environment and ecology	2	3000	1100	8000	
Biometry					
Soil physics					
Agricultural biochemistry					

Aquaculture					
Biometry		6500	5500	4000	
Human Resources Managemnt MSc					
Laboratory technician training			10000		
Packaging for dissemination	20	6,000	6,000	2567	
Scientific writing for publication	20	6,000			
Data management and IT skills			10000	10000	
TOTAL		**61,500**	**64,600**	**40,567**	**166,667**
Professional skills development					
Proposal writing esp. financial aspects	20	6000			
ICT, website and electronic media	20	10,000			
Quality assurance			xxx		
Fund raising					
Communication systems			xxx		
Negotiation skills			xxx		
Marketing and PR strategies, lobbying			xxx		
Facilitation of technical networking skills		6000			
Gender analysis and social science skills			xxx		
Capacities to dialogue &influence NARS					
TOTAL		**22,000**	**76,667**	**68,000**	**166,667**

Ulrich Kleih (NRI) - Itinerary in Mali

Date	Persons met	Organisation
19/11/2007	Dr Bino Témé	Directeur Général, Institut d'Economie Rurale (IER), Bamako
19/11/2007	Dr Lassine Diarra	Ecologue / Editeur Scientifique, IER
19/11/2007	Dr Dembélé	Directeur Scientifique, IER
19/11/2007	M. Ousmane Sanogo	Directeur, Direction du Service d'Appui Technique, IER
19/11/2007	Dr Abdoul Karim Traoré	Directeur de Recherche, Coordinateur Scientifique des Cultures Pluviales, IER
19/11/2007	M. Aly Ahamadou	Economètre, IER
19/11/2007	Dr Adama Traoré	Secrétaire Exécutif, Comité National de la Recherche Agricole (CNRA)
19/11/2007	Dr Dicko	Coordonnateur, Suivi et Evaluation, CNRA
19/11/2007	Dr Modibo Haidara	Directeur Général, Centre National de la Recherche Scientifique et Technologique (CNRST), Bamako, Mali
19/11/2007	Dr Aly Yéro Maiga	Directeur Général Adjoint, CNRST
19/11/2007	Dr Amadou Diallo	Vice-Recteur, Université de Bamako
20/11//2007	Dr Saidu Tembely	Directeur Général, Labaratoire Central Vétérinaire (LCV), Bamako
20/11//2007	Dr Fousseyni Mariko	Secrétaire Général, Ministère de l'Agriculture, Bamako
20/11//2007	M. Daniel Siméon Kelema	Directeur National Adjoint, Direction Nationale de l'Agriculture, Bamako
20/11//2007	Dr Amadou Diallo	Vice-Recteur, Université de Bamako
20/11//2007	Prof Salif Berthe	Doyen, Faculté des lettres, Langues, Arts et Sciences Humaines (FLASH), Université de Bamako
20/11//2007	Prof S. Sanogo	Doyen, Faculté des Sciences et Techniques (FAST), Université de Bamako
20/11//2007	Prof Seydou Zibba Maiga	Chef du DER de Biologie
21/11//2007	M. Diakité	Président, Comité National de Producteurs,

		Bamako, Mali
21/11//2007	M. Idrissa Diallo	Secrétaire Général Adjoint, Assemblée Permanente des Chambres d'Agriculture du Mali (APCAM), Mali
21/11//2007	M. Abdoulaye Keita	Conseiller Technique, APCAM
21/11//2007	Dr Mamadou D. Coulibaly	Directeur, Direction Nationale des Productions et des Industries Animales, Ministère de l'Elevage et de la Pêche
21/11//2007 pm	Stakeholder meeting, Presentation of SCARDA and discussion of preliminary findings	About 20 stakeholders of Mali's National Agricultural Research System Meeting at IER
22/11//2007	Workshop participation	Séminaire autour de l'Expertise collégiale : Avenir du fleuve Niger, Organisé par l'IER (Mali) et l'IRD (France)
23/11//2007 am	Dr Lassine Diarra (IER) Dr Niamoye Yaro Diarisso (IER), et Dr Youssouf Sanogo (FAST, Université de Bamako)	Group work at IER to discuss SCARDA activities, in particular those that could start in early 2008
23/11/2007 pm	Flight, Bamako – Niamey	

GHANA

Focal Institution:

Council for Scientific and Industrial Research

1. Background

Ghana's second Growth and Poverty Reduction Strategy (GPRS II: 2006 - 2009), aims to double the size of the economy within the next decade and to bring the per capita income of the average Ghanaian to middle income level by 2015. The main priority for delivery is the development of human resources. However, agriculture remains a key sector (employing over 60% of the population) and agricultural modernisation constitutes the second most important strategic priority under GPRS II.

The cornerstone of the modernization programme is the development of an agro-based industrial economy through a more private sector, market-driven approach that is orientated towards achieving significant improvements in the productivity of the small-scale farmer and farm labourer and enhancing infrastructure.
To effect such significant change requires a mixture of institutional and technological innovations allied to enhanced training to improve the capacity of all stakeholders in the supply chain. The policy objectives and strategies to achieve this include:

- integration of the nation's production sectors into the domestic market;
- promotion of agro-processing;
- improvements in agricultural marketing;
- enhanced access to export markets.

2. CSIR/CRI Mandate

The Government of Ghana has mandated the Council for Scientific and Industrial Research (CSIR) to co-ordinate and implement its policies on scientific research and development. Its mission is "to become the force for accelerate social and economic development of Ghana through examining, exploring and creating science and technology catalysts for public and private wealth creation". CSIR is comprised of a secretariat and thirteen semi autonomous research organizations, of which eight are involved in agricultural research[6]. CSIR comes under the Ministry of Education, Science and Sports.

The **Crop Research Institute (CRI**) is the largest of the CSIR institutes and is considered to be central to agricultural research because of its direct linkages to farmers and other key stakeholders. For these reasons CSIR has selected CRI as a focal institute for SCARDA. The Crops Research Institute was founded in 1964, although its antecedents go back to the 1950s. In 1968 it became one of the Institutes of the CSIR. CSIR-CRI operates mainly in the south of the country covering the forest, coastal savannah and forest-savannah transition zones. The motto of CSIR-CRI is 'Research for Development'. The vision of CRI is '*to be a centre of excellence for innovative and quality agricultural research for development*', with a mission '*to develop and disseminate environmentally sound technologies for high and sustainable food and industrial crop productivity and enhanced food security and poverty reduction'*.

CRI has a broad research mandate covering most food and industrial crops (except cocoa, coffee, cola, sheanut, coconut, oil palm, sorghum and millet which are the mandated crops of other research institutions).

[6] Crops Research Institute, Food Research Institute, Soils Research Institute, Forestry Research Institute, Savanna Agricultural Research Institute, Animal Research Institute, Oil Palm Research Institute, Plant Genetics Resource Centre.

3. CRI Structure

The Institute comprises 83 research graduate staff (senior members), 100 technical staff and 320 other non-research staff including unskilled labour, administered through the following divisions:

- Horticulture - (Vegetables and fruit crops including plantain and bananas).
- Roots and Tubers - (Cassava, yam, cocoyam, sweet potato)
- Grains - (Maize, rice and legumes, seed technology).
- Crop Protection - (Plant pathology, Nematology, Virology, Entomology, Biological control, Weed Science).
- Resource and Crop Management (On-station agronomy, on-farm Agronomy, Agricultural, Economics and Rural Sociology).
- Post Harvest - (Varieties with postharvest attributes. Management of harvesting, drying, storage, processing and utilisation; Socio-economics).
- Technical Services - (Biochemistry, Tissue Culture, Biometry, Library, Training and Communication.)
- Administration - (General administration, transport and farm mechanization, farm management).
- Accounts - responsible for financial transactions.
- Business Development Unit- responsible for commercial activities

CSIR-CRI has invested substantial time and resources in its strategic planning. Its five strategic goals are;

Goal 1: Appropriate technologies developed and disseminated.
Goal 2: Institutional capability for effective research and service delivery improved.
Goal 3: Sustainable funding sources identified, accessed and funds efficiently managed.
Goal 4: Management and operating procedures and systems improved.
Goal 5: Strategic partnership and collaboration with stakeholders developed and/or strengthened.

These goals are well aligned with the objectives of SCARDA programme, which will directly contribute to goals 2 and 4, and through its specific outputs will support goals 1, 3 and 5.

4. CRI Major Programmes and partnerships

With donor support from CIDA (under the GGDP) and the World Bank (under the NARP) CRI has trained about 70 of its staff at post-graduate (MSc/M.Phil and PhD) level. It has built a training centre to facilitate national and international training programmes managed by a dedicated training unit. Research and supporting activities are undertaken through 12 programmes as listed below:

PROGRAMME	**Ph. D (28)**	**MSc/M.P (15)**	**BSc (15)**	**TOTAL (77)**
1. Maize	1	2		3
2. Legumes	2	1	2	5
3. Rice	4	2	1	6
4. Seed technology	1	2		3
5. Roots and tuber	1	6	1	8
6. Horticulture	2	5		7
7. Resource and crop management	5	5	2	12
8. Plant health	5	3	4	12
9. Biochemistry/biotechnology/post harvest		4	2	6
10. Socio- economics	2	4		6
11. Biometrics	1	1	3	5
12. Training & communication	1	2		3

CSIR-CRI's closest stakeholder interactions and research partnerships are with the other Agricultural Research institutes of CSIR, the Ministry of Food and Agriculture, farmers, agriculture faculties of the Universities, International Research Institutes, NGOs and agro processors. Relationships with other educational institutions, industry/private sector, Ministry of Health and policy makers were less strong.

5. Rationale for participation in SCARDA

CSIR-CRI is in a pivotal position in agricultural research and development in Ghana. It is delivering quality research, particularly in technology development and varietal release of high quality food and industrial crops. It is committed to multidisciplinary and participatory approaches. It plays an important role in agricultural education, by training students and researchers from universities and other organisations. CSRI-CRI women scientists act as role models to encourage female students into sciences and research. Beyond its internal research capacity, CSIR-CRI is well linked with a broad range of internal stakeholders[7] and external clients and puts a particular emphasis on communicating the results of research through training, publications and information materials. They are well positioned, both to improve their own capacities and also to enhance the capacity of their partners (both public and private sector) in Ghana and potentially in the region, through the further development of their own capacity strengthening role under SCARDA. The emphasis within CSIR on regular planning and investment in human resource development and the interest of senior management in developing internal training capacity, provide supportive conditions for the sustainability of SCARDA beyond the current project phase.

6. Research capacity needs.

Capacity strengthening needs were discussed in meetings with CSIR-CRI staff and managers and in a half-ay workshop attended by over 30 staff. The needs were discussed in relation to the effective delivery of the institute's strategic goals.

Staff and management of CSIR-CRI identified both general areas and specific needs for capacity strengthening, covering research management, quality research delivery, professional skill development and strengthening their capacity to build capacity.

In terms of capacity to undertake quality research, new areas highlighted for training investment included modern techniques and tools for crop breeding (marker assisted selection, QTL mapping and bioinformatics), IPM and pest resistance, post harvest technologies, biochemistry and value addition, biometrics, crop modelling, risk management and biosafety (GMOs, chemicals etc.) (Table 14).

Research management was another important area, covering human resource management, financial management and project management. SCARDA could contribute by helping to strengthen capability in research management within CSIR –CRI, but also to develop CSIR-CRI capability in design and delivery of training in research management for other CSIR institutes and national and regional research bodies. (Table 15)

Information management and communications were strongly emphasised including the need for training in ICT (internet, data storage and website development), institutional networking skills, public relations/lobbying and advocacy skills, and publishing and information dissemination (Table 16). The training unit was keen to strengthen their training capability

[7] E.g. Agricultural Research Institutes of CSIR, Ministry of Food and Agriculture, Farmers, Agriculture faculties in Universities, International Research Institutes, NGOs and Agro processors.

and commercial training service provision Other skill development needs included training for administrative and secretarial staff and skills in fund raising, including research proposal writing and budgeting.

These capacity strengthening needs could be delivered through a combination of higher degrees, short and medium term courses, attachments and exchange visits to advanced institutions and laboratories, mentoring programmes and in house training. The involvement of internal resource persons and simultaneous building of their capacity was also suggested.

7. Schedule of proposed activities with associated costings

Proposed activities are shown in tables 13-15 below and estimated costings are indicated in Table 16. Early activities include training in different aspects of Research Management, courses on modern techniques and tools for crop breeding, risk management, crop modelling and IPM and crop post harvest management and value addition. Training in ICTs and communication were also considered a priority.

Consultants: **Dr John Orchard and Ms Adrienne Martin**

Table 13. Capacity to undertake quality research

Capacities needed	Early priorities	How to address	By whom
• Training of personnel to acquire modern skills • Academic skills: PhD MSc • Short and medium courses/progs: Bioinformatics Biometrics MAS QTL mapping and analysis Resistance development (diseases and pests) Post harvest technologies Biochemistry and value addition Management of research Administrative and secretarial training ICT	• Modern techniques and tools for breeding of crops • Development of capacity in risk management – GMOs, chemicals etc • Research and management training (human, finance, projects) • Capacity in crop modelling • Information management and storage (research. Personnel, library, database, website development. • Skills in IPM • Modern techniques for post harvest management of mandate crops/value addition.	• PHDs, MScs • Short medium term courses • Attachments/ exchange visits to advanced institutions and labs. • Mentoring programmes and in house training • Collaboration with advanced institutes and laboratories: Biosafety training Exchange visits. • Training at management schools (GIMPA, external institutes, etc.) • Training in advanced institutes for crop modelling. • Training at specialised ICT institutions • Training in advanced IPM institutes • Training in post harvest and value addition at advanced institutions.	International, National, Regional and local organisations with proven record.

Table 14 Agricultural Research Management			
Capacities needed	**Early priorities**	**How to address**	**By whom**
Key national agricultural problem identification	Linkage with stakeholders in agriculture should be improved	A strong PRO lobbyist External assistance	CSIR, CRI secretariat, FAO, FARA
Development of strategies to address constraints	Scientist, HRD Human relations development	Training and skills development	GoG, CSIR secretariat, CRI.
Be able to sell strategies to government and funding agencies.	Human relations development	A strong PRO lobbyist External assistance	Mgt of Institute
Efficient management of: o Research work o Human resources o Information and technology o Finance o Time	- Management trained to manage agricultural research - Human resources manager to be recruited - Information flow – horizontal and vertical - Information flow: horizontal and vertical - Top/middle level	Training for senior members Define job descriptions clearly, recruit, train Transparency Monitoring and supervision	CSIR and external CRI, CSIR Management, heads of department, supervisors
Record keeping	Upgrade/update modernise	Computerise with appropriate software	CSIR, CRI
Project management		Train staff involved. Made available on line	

Table 15. Professional Development			
Capacities needed	**Early priorities**	**How to address**	**By whom**
Human capacities 1. PR outfit – training of personnel 2. Training up scientists in internet usage 3. Lobbying and advocacy skills 4. Training in proposal writing and fund raising for research activities. 5. Publishing and information dissemination skills (local and international. 6. Project management skills. **Institutional** 1. Efficient internet facilities established 2. Well trained management team to manage the ICT. 3. Well established communication systems. 4. Staff trained in the management of ICT/ communication systems. 5. Staff trained to use ICT/communication systems. 6. Training staff in institutional networking	• Training scientists in ICT and provision of ICT system • Proposal writing /sourcing for funds. • Lobbying and advocacy skills.	1. identify internal resource personnel 2. Support from relevant collaborators 3. Management training in advocacy /lobbying skills, e.g. GIMPA, MDP1 4. Project management skills.	Management training Institute Sister research institutes and national institutions Donors

Table 16 Council for Scientific and Industrial Research – Crops Research Institute Ghana

INSTITUTIONS		**CRI - Ghana**			
		Yr 1	Yr 2	Yr 3	**TOT**
	No	£	£	£	
Research management					
Short courses	20	6,000			
Financial resources management	20	6,000			
Research/ prog management	20	12,000	xxx	xxx	
Stakeholder analysis					
Innovation systems					
Research/extension/producer linkages					
Research commercialization & marketing					
Research strategy planning			xxx	xxx	
M&E, Impact Assessment			xxx		
Commercialization of training unit	8	8000	xxx	xxx	
TOTAL		**32,000**	**24,600**	**19,750**	**76,350**
Capacity to do quality research					
Biotechnology; QTL mapping, MAS	20	12,000			
Bioinformatics	20		10000		
Biosafety and risk evaluation	20	12000			
Techniques plant breeding	1	1500	5500	4000	
Crop protection, IPM	1	1500	5500	4000	
Crop modeling	1	1500	5500	4000	
Animal health					
Post harvest technologies, value addition	1	1500	5500	4000	
Participatory research methods & PVS	20	10000			
Biodiversity/ Environment and ecology					
Biometry					
Soil physics					

Agricultural biochemistry					
Aquaculture					
Biometry	20		6000		
Human Resources Management MSc	1	1500	5500	4000	
Laboratory technician training					
Packaging for dissemination	20		6000		
Scientific writing for publication	20	6,000			
Data management and IT skills			6000		
TOTAL		**47,500**	**55,500**	**20,000**	**123,000**
Professional skills development					
Proposal writing esp. financial aspects	20	6,000			
ICT, website and electronic media	20	12000			
Quality assurance					
Fund raising			xxx		
Communication systems			xxx		
Negotiation skills					
Marketing and PR strategies, lobbying	20	12000			
Facilitation of technical networking skills		6,000			
Gender analysis and social science skills			xxx		
Capacities to dialogue &influence NARS					
TOTAL		**36,000**	**54,000**	**37,000**	**127,000**

THE GAMBIA

Focal Institution:

National Agricultural Research Institute

Background

The agricultural sector employs 75% of the labour force and is also the sole means of income generation for the majority of rural households below the poverty line. The Second Poverty Reduction and Strategy Paper (PRSP II), covering an implementation period of 2007 – 2011, identifies the need for investment to transform agriculture from subsistence to a commercially-oriented sector in order to raise income, improve food security and reduce poverty.

Of relevance to SCARDA are the identified priorities to:

- improve organization and programme management of the extension system to be able to provide and sustain a flow of relevant technological and technical information;
- strengthen research on farmer – extension linkages and increase the capacity of farmers to participate effectively in the management of agricultural institutions and on-farm research;

Mandate and Rationale for participation in SCARDA

Gambia has only one agricultural research institute, called the National Agricultural Research Institute (NARI}, and this is the dominant organization within the national agricultural research system of Gambia. As a small country, NARI has just less than 23 agricultural research scientists, with 4 women (about 17%) and a few field experienced field technicians. A majority of the researchers are young and require technical training to enhance their skills.

NARI has viable on-going research programmes but research activities are is severely constrained by the availability of enough well trained research personnel and a serious lack of operational funds.

The newly established University of the Gambia includes a Faculty of Agriculture which offers courses in general agriculture. Since the Faculty is new, and the academic staff have not been long in post, agricultural research activities are still highly limited.

Structure

The major features of the Gambian NARS are as follows:

- NARI dominated by young scientists
- Low numbers of research scientists; only 4 women out of 32 (including 9 Higher National Diploma staff with over 20 years field experience)
- Poor conditions of service for agricultural researchers leading to high attrition;

Major programmes

NARI's current research programme places a relatively greater emphasis on horticulture, compared to support for livestock, fisheries, and business channels, marketing and land tenure. Government funding for agricultural research is relatively low and NARI has to rely on external funding for its basic operating costs and support for research activities. The identified capacity needs are shown in Table 17 and the budget in Table 18.

Table 17 Research capacity needs.

Areas for Capacity Strengthening	*Target Institutions*	*Proposed capacity strengthening activities*
1.Scientific capacity: Conducting high quality research • Soil physics • Biotechnology • Agricultural Biochemistry • Aquaculture • Agro climatology • Pest Management • Biometry • Laboratory technology	NARI University of Gambia	i. Higher degree training for young scientists in specific disciplines ii. Mentoring by senior scientists iii Professional training through attachments
2. Agricultural research management • Human Resources Management • Financial management • Access to financial management tools	NARI University of Gambia	i. Senior management training in Agricultural research management ii. MBA training for senior research management staff iii. Training in management of agricultural finance.
3. Agricultural Communication and Information Management • Building human capacity in communication of research results • Institutional Capacity in scientific writing and preparing publications Institutional capacity in information management	NARI University of Gambia	i. Training in agricultural information management ii. Establishment of agricultural information centre facilities iii. Training workshops in agricultural journals management iv. Training workshops in dissemination of agricultural information.
4. Agriculture Policy Formulation and implementation	NARI Department of State, Higher Education, Research, Science & Technology Ministry of Agriculture	i. Professional training in agricultural policy formulation ii. Attachments for enhancing skills iii. Training workshops on policy formulation and strategic planning iv. MBA courses
5. Monitoring & Evaluation • Building Human and	NARI	i. Staff Training in M & E at NRI, UK

Institutional capacity	University of Gambia	ii. Training workshops on M & E
6. Research Institute/University Linkages	NARI University of Gambia NGO Farmers Platform	i. Technical seminars to define areas and model of linkage ii. Workshops to review progress in linkages and collaboration.
7. Agricultural database management.	NARI University of Gambia	i. Group training courses in agricultural database management

Schedule of proposed activities with associated costings

In line with proposed activities from other countries it is proposed to prioritise institutional capacity building associated with agricultural research management.

Consultant: Dr John Orchard

Table 18 National Agricultural Research Institute, The Gambia

INSTITUTIONS	**NARI - Gambia**			
	Yr 1	Yr 2	Yr 3	**TOT**
	£	£	£	
Research management				
Short courses	xxx			
Financial resources management	xxx			
Research/ prog management	xxx	xxx	xxx	
Stakeholder analysis				
Innovation systems		xxx		
Research/extension/producer linkages				
Research commercialization & marketing				
Research strategy planning				
M&E, Impact Assessment	xxx	xxx		
Commercialization of training unit				
TOTAL	**45,000**	**30,000**	**25,000**	**100,000**
Capacity to do quality research				
Biotechnology; QTL mapping, MAS	xxx			
Bioinformatics				
Biosafety and risk evaluation				
Techniques plant breeding				
Crop protection, IPM	xxx			
Crop modeling				
Animal health				
Post harvest technologies, value addition				
Participatory research methods & PVS				
Biodiversity/ Environment and ecology				

Biometry	xxx	xxx	xxx	
Soil physics	xxx	xxx	xxx	
Agricultural biochemistry	xxx	xxx	xxx	
Aquaculture	xxx	xxx	xxx	
Biometry				
Human Resources Management MSc				
Laboratory technician training		xxx		
Packaging for dissemination		xxx		
Scientific writing for publication	xxx			
Data management and IT skills	xxx			
TOTAL	**58,750**	**133,250**	**79,500**	**271,500**
Professional skills development				
Proposal writing esp. financial aspects				
ICT, website and electronic media				
Quality assurance				
Fund raising		xxx		
Communication systems				
Negotiation skills				
Marketing and PR strategies, lobbying				
Facilitation of technical networking skills	xxx			
Gender analysis and social science skills				
Capacities to dialogue &influence NARS		xxx		
TOTAL	**33,400**	**69,500**	**32,850**	**135,750**

Note: xxx refer to identified activities that have not yet been costed.

REPUBLIC OF CONGO

Focal Institution:

Centre de Recherches Agronomiques de Loudima

BACKGROUND

The Republic of Congo experienced civil war that ended in 1997, a war that caused considerable destruction of the agricultural research infrastructure which had been established by the French, through French Cooperation FAC, over several decades.

Since the end of the civil conflict, efforts have been on-going to rehabilitate the urban and rural economy and especially the agricultural research systems, through international assistance in various programmes including an FAO Special Programme for Food Security, SPFS, a World Bank project on Agricultural Development Reforms and the Persistent Organic Pesticides POP project funded by the European Union.

The agricultural research system is currently in poor shape - research laboratories are available but barely functional because all the equipment was vandalised and destroyed during the war and trained staff abandoned the institutes. At the SCARDA-selected focal institution, the Centre de Recherches Agronomiques de Loudima (CRAL), electricity and water and only available for part of the day and there is no internet access. Efforts are underway to re-establish the national and regional agricultural research and production programmes especially addressing rehabilitation of research infrastructure and development of agricultural research programmes for development; these include:

- Rehabilitation of research infrastructure at the CRAL headquarters and field stations, especially providing operational facilities, namely vehicles for transportation,(including tractors and field trucks), electricity, water, telephone, fax, and email connectivity,
- Recruitment of key research personnel to move towards a critical mass for implementation of the research programmes
- Formulating and implementing a specialist training programme for research scientists and technical research support personnel – with special focus on young scientists
- Formulating and implementing an in-service training programme for administrative and research management personnel
- Strengthening AGRICONGO and building up the information and communication unit for agricultural communication of research results and technologies, and strengthening collaboration between AGRICONGO and CRAL
- Formalise and implement the MOU for the collaboration between the National Agricultural Research Institutes and the Universite Marien Ngouabi
- Re-establish linkages with sub-regional and international agencies, NGOs, Networks and development partners

While salaries are centrally paid, and there is an allocation of operational research budget, the funds for this physical refurbishment, re-equipping and other capacity building initiatives are reported to be very difficult to access.

Currently the NARS is highly fragmented with agricultural research activities undertaken at over 15 difference research organisations, under the supervision of four different Ministries. The 10 that are under the Ministry of scientific research and technical innovation are coordinated by the Délégation Générale à la Recherche Scientifique et Technologique (DGRST), which is also in charge of research carried out in other sectors such as biomedical science, engineering science, social and human sciences. Dr Gregoir Bani, DG of the Focal Institute, Centre de Recherches

Agronomiques de Loudima (CRAL) is the DGRST representative for the national agricultural research institutes, and is also the CORAF liaison person in Congo Brazzaville. He seems to be a driving force behind the move to combine many of the individual institutes into one central agricultural research institute – a move that has high level approval and the support of individual institute heads and that may happen in 2008, presumably if funds permit.

Organisations under the jurisdiction of the Ministry of scientific research and technical innovation

- CRAL : Centre de Recherches agronomiques de Loudima (with 10 field stations in other parts of the country)
- CERAG : Centre de recherche sur l'Amélioration Génétique des Plantes
- CRVZ : Centre de recherches Vétérinaires et Zootechniques
- CRHM : Centre de recherche Hydrobiologique de Mossaka
- CRFL : Centre de recherche Forestières du Littoral
- CRFO : Centre de recherche Forestière de Ouesso
- CRCRT : Centre de Recherche sur la Conservation et la Restauration des Terres
- GERDIB : Groupe d'Etude et de Recherches sur la Diversité Biologique
- CERVE : Centre d'Etudes sur les Ressources Végétales
- CRIPT : Centre de Recherche et d'Initiation des Projet Technologiques

Note : All of the research centres have training activities associate with research and support for agricultural development. In addition to these research centres, other important institutions are the Centre National de Documentation et d'Information Scientifique et Technique (CNDIST), l'Agence National de Valorisation des Résultats de la Recherche (ANVAR).

Organisations under the Ministry of Higher Education

- The Faculty of Science – Université Marien Ngouabi, Brazzaville
- Institut de Développement Rural

Organisations under the supervision of the Ministry of Agriculture and Animal Breeding

- Centre National de Semence Améliorées (CNSA)
- Centre de Vulgarisation des Techniques Agricoles (CVTA)
- Centre National des sols (CNS)

Organisations under the supervision of the Ministère de l'Economie Forestière

- Centre National des Inventaires et de l'Aménagement Forestier (CNIAF)
- Service National de Reboisement

Research NGOs

- Unité de Recherche sur la Productivité des Plantations Industrielles (UR2PI)
- AGRICONGO

MANDATES OF RESEARCH ORGANISATIONS

CRAL and CERAG

- Selection and improvement of food crops, market-gardening, fruits and industrial crops;
- Development of pest management methods
- Development of the adapted farming techniques
- Control of the seeds and seedlings of foreign origin
- Control and certification of seeds

- Support for national agricultural development by promoting adoption of the techniques in the field, improvement of field teams and technicians, and other action for rural development
- Support to university training, training through research, studies and advice on development

CRZV et le CRHM

The improvement of types of short cycle breeding, control of animal disease, epidemiological monitoring, the quality of pasture, the conservation of fodder resources, the development of food containing local ingredients, appropriate tools and techniques of fishing, the control of invasive water weeds.

CRFO, CRFL, GERDIB, CERVE

Understanding forest ecosystems, development of rational methods of forest exploitation.

CRCRT

Cartography and agricultural use of soils, development of techniques to manage, conserve and improve soils.

CRIPT

Development of methods of manufacturing products.

The Faculty of Science – Université Marien Ngouabi, Brazzaville

Plant and animal biology, chemistry, biochemistry, microbiology, PhD studies in natural sciences and agronomy. Scientists are involved in agricultural research and an MOU has been signed between the university and the national Agricultural Research Institutes, but implementation of the activities within this MOU is on a very limited scale.

Institut de Développement Rural

Plant science, animal and veterinary science, phytosanitary issues, icthyololgy, rural socio-economics. Training of rural development staff.

Centre National de Semence Améliorées (CNSA)

Multiplication of seeds produced by CRAL or from outside the country.

Centre de Vulgarisation des Techniques Agricoles (CVTA)

Extension outreach of rice production methods

Centre National des sols (CNS)

Mapping and defining agricultural suitability of soils, monitoring fertility of cultivated soils.

Centre National des Inventaires et de l'Aménagement Forestier (CNIAF)

Inventories of flora and fauna

Service National de Reboisement

Extension outreach of sylviculture techniques

Unité de Recherche sur la Productivité des Plantations Industrielles (UR2PI)

Improvement of the productivity of industrial crops, particularly fast-growing species (Eucalyptus, Pinus on sandy soils in littoral areas)

There is also an agricultural research/ development/extension liaison agency called AGRICONGO whose mandate also includes adaptive research, and seting up and management of plant collections

RATIONALE FOR PARTICIPATION IN SCARDA

The Republic of Congo is a country emerging from conflict that had its previously functional NARS system destroyed. However, there is still a strong political and scientific memory of the benefits of agricultural research for development and investments in strengthening research capacity are likely to pay dividends in terms of improved provision of seeds, practices and technologies to poor farmers. The Director General of CRAL currently plays a lead role in the formulation of national agricultural research policy (through his representation of DGRST) and is likely to be a key figure if/when the planned consolidation of disparate research organisations occurs. As such CRAL/DGRST is an ideal entry point for capacity strengthening initiatives in the Republic of Congo.

INSTITUTIONAL STRUCTURE:

Centre de Recherches Agronomiques de Loudima (CRAL)

B.P. : 28 Loudima Rép. CONGO

Tél: (242) 68 81 74 Fax:(242) 81 03 30

E-mail : craldgrst@yahoo.fr

Currently, CRAL has its headquarters, laboratories and fruit tree research unit at Loudima some 300 km from Brazzaville with 10 regional agronomic research stations located at Sibitiu, Kindambau, Odzibau, Ewou, Impfondou, Lékanau, Gambomau, Oyou, Kaonu, Ngoua.

Nationally, CRAL has 39 staff including 13 researchers (all male, and 7 of which are plant breeders), 14 technicians and research auxiliaries, 5 administrative and 5 temporary (night watchmen and gardeners). The organisational structure is as follows:

Logistical support service

- Finance and procurement
- Admin and human resources
- Documentation and publication
- Maintenance and 'travaux culturaux' ?

Technology transfer service

- Seed 'de pré base' ?
- Extension and dissemination

Laboratories

- Plants, roots and tubers
- Grain legumes
- Cereals
- Soil science
- Production systems
- 'Phytiatrie' ?

CRVZ has 13 research staff – all male.

MAJOR PROGRAMMES AND PARTNERSHIPS

At CRAL, the four major programmes of research are :

- Selection and improvement of varieties and clones which best meet the needs of the market
- Management of agricultural systems through development of production and post harvest techniques
- Integrated pest management in agricultural systems involving developing physical, chemical, biological and biotechnological solutions
- Promoting under-utilized crops

Partnerships and collaborations are mainly within the country, involving other centres of research (CERAG, CERVE, GERDIB, IRD, UR2PI), the Université Marien NGOUABI (Faculté des Sciences, Institut De Développement Rural), AGRICONGO, Ministère de l'Agriculture, de l'Elevage, de la Pêche, FAO, Bureau de la Représentation au Congo and CICR, Délégation à Brazzaville

Internationally there has been limited collaboration with SNRA Membres of CORAF, IITA, Bioversity, WARDA, CARBAP, Institut International d'Agriculture Tropicale (IITA), Centre du Riz pour l'Afrique (ADRAO)

RESEARCH CAPACITY NEEDS: KEY AREAS THAT CAN BE ADDRESSED BY THE PROGRAMME.

Infrastructural strengthening, refurbishment and new equipment are clearly required if the benefits of SCARDA human and institutional strengthening are to be realized. The lack of capacity to propose and negotiate this physical strengthening with other major donors such as the World Bank or FAO was identified by focal institution staff. They requested a SCARDA capacity strengthening intervention comprising an in-country training course on proposal preparation, using the current capacity needs that do not fit the SCARDA programme as a case study.

Other capacity strengthening needs identified during the inception phase are tabulated below, but further work is required to prioritise these and define activities to address them. Table 19 provides information on the areas of capacity strengthening needs, target for capacity strengthening and capacity strengthening activities with the budget in Table 20.

Consultant: Dr Hans Dobson

Table 19 capacity strengthening needs, target for capacity strengthening and capacity strengthening activities.

Areas of Capacity Strengthening Needs	*Target for capacity strengthening*	*Capacity strengthening activities*
1. Agricultural Research Management.	Directors and Senior Staff at CRAL CRVZ AGRICONGO	▪ Research programme management ▪ Financial management ▪ Personnel management ▪ Institutional change (Management of National Agricultural Research Institutes Reform process). ▪ Intellectual Property Rights management ▪ Monitoring &Evaluation ▪ ID of researchable problems ▪ Fund raising, proposal writing **Prioritised Priorities** ▪ Institutional change (Management of National Agricultural Research Institutes Reform process) and innovation systems. ▪ Demand identification and research strategy development ▪ Fund raising, proposal writing ▪ Planning, Monitoring &Evaluating

2. Scientific research capacity - Conducting high quality innovations systems agricultural research	Agricultural research scientists at CRAL and CRVZ	▪ Livestock research ▪ Biotechnology ▪ Biometry ▪ Plant Breeding ▪ Seed multiplication an certification ▪ Plant Protection – pathology, Entomology, Nematology, Bacteriology ▪ Biodiversity ▪ Crop protection/IPM ▪ Socio-economics- marketing, sociology, anthropology, ▪ Technology for transformation and value adding ▪ Chemical analysis skills ▪ Taxonomy ▪ Fermentation and distillation ▪ Soil science and conservation ▪ Technician training ▪ Tissue culture methods **Prioritised Priorities** ▪ Biometry ▪ Plant breeding and multiplication ▪ Crop protection/IPM ▪ Biodiversity ▪ Technician skills ▪ Livestock research (which??) ▪ Soil science and conservation ▪ Technology for processing and value addition

3. Continuing professional development	Documentalist at AGRICONGO Other frontline staff in NARS Mid level researchers	**Agricultural Communication & Information management** i. Training in Scientific Writing and agricultural Communication ii. Training in management of Agricultural Journals iii. Training in agricultural information management and website design. **Collaboration and linkages** Establish linkages with CORAF/WECARD and FARA ii. Set up national forum for collaboration amongst networks. iii. Implement the CRAL/University MOU. Ensuring access to networks and learning platforms Trial design, sampling, statistics and data interpretation ***Prioritised Priorities*** Trial design, sampling, statistics and data interpretation Scientific Writing Communication with agriculturalists Interaction with networks and communities of practice (including CORAF, University) Training of trainers

Table 20 Centre de Recherches Agronomiques de Loudima, Congo-Brazzaville

INSTITUTIONS CRAL	Congo
	£
Research management,	
Short courses	
Financial resources management	
Research/ prog management	
Stakeholder analysis	
Innovation systems	
Research/extension/producer linkages	
Research commercialization & marketing	
Research strategy planning	
M&E, Impact Assessment	
Commercialization of training unit	
TOTAL	**113,500**
Capacity to do quality research	
Biotechnology; QTL mapping, MAS	
Bioinformatics	
Biosafety and risk evaluation	
Techniques plant breeding	
Crop protection, IPM	
Crop modeling	
Animal health	
Post harvest technologies, value addition	
Participatory research methods & PVS	
Biodiversity/ Environment and ecology	
Biometry	

Soil physics	
Agricultural biochemistry	
Aquaculture	
Biometry	
Human Resources Management MSc	
Laboratory technician training	
Packaging for dissemination	
Scientific writing for publication	
Data management and IT skills	
TOTAL	**205,500**
Professional skills development	
Proposal writing esp. financial aspects	
ICT, website and electronic media	
Quality assurance	
Fund raising	
Communication systems	
Negotiation skills	
Marketing and PR strategies, lobbying	
Facilitation of technical networking skills	
Gender analysis and social science skills	
Capacities to dialogue &influence NARS	
TOTAL	**145,650**

* Information on the activities was still pending when this report was submitted.