



THE REPUBLIC OF SIERRA LEONE



**FORUM FOR AGRICULTURAL
RESEARCH IN AFRICA**

CAPACITY ASSESSMENT REPORT FOR SIERRA LEONE AGRICULTURAL RESEARCH INSTITUTE

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TABLE OF CONTENTS

Abbreviations and Acronyms	iii
Acknowledgement	iv
Executive Summary	v
1.0 Background.....	1
1.1 Introduction.....	1
1.2 Sierra Leone Agricultural Research Institute.....	1
1.2.1 Strategy for Responding to the Agricultural Sector Development Challenges.....	1
1.2.2 Institutional Strategic Direction.....	2
1.2.3 Institutional Level Results.....	2
1.3 The Need for Capacity Assessment for SLARI.....	3
2.0 SLARI Capacity Assessment Approach and Methodology.....	5
2.1 Introduction.....	5
2.2 SLARI Capacity Assessment Framework.....	6
2.2.1 Capacity Assessment Point of Entry.....	7
2.2.2 Capacity Development Strategic Areas of Focus.....	7
2.3 SLARI Capacity Assessment Process.....	7
2.3.1 Mobilize and Design.....	8
2.3.2 Conducting the Capacity Assessment.....	8
2.3.3 Analysis and Interpretation of the Results.....	9
2.3.4 Formulation of Capacity Development Response.....	10
2.3.5 Validation of the Findings.....	10
3.0 Capacity Assessment at the Individual Level.....	11
3.1 Introduction.....	11
3.2 Findings.....	12
3.2.1 Total and Age Distribution of Research Scientists.....	12
3.2.2 Research Scientists Level of Training.....	13
3.2.3 Disciplinary Mix of Research Scientists.....	13
3.3 Assessment of Job Descriptions and Duties.....	15
3.3.1 Introduction.....	15
3.3.2 Findings.....	16
3.4 Assessment of Performance Gaps.....	18
3.4.1 Introduction.....	18
3.4.2 Findings.....	19
4.0 Capacity Assessment at the SLARI Organizational Level.....	21
4.1 Introduction.....	21
4.2 Research Programming and Management.....	21
4.2.1 Findings.....	22
4.3 Human Resource Development and Management.....	23
4.3.1 Findings.....	23
4.4 Financial Resource Mobilization and Management.....	25
4.4.1 Findings.....	26
4.5 Physical Infrastructure Development and Management.....	27
4.5.1 Findings.....	28

4.6	Organizational Leadership and Management.....	32
4.6.1	Findings.....	32
4.7	Corporate Governance and Process Management.....	33
4.7.1	Findings.....	33
4.8	Organizational Governing and Operating Structure.....	34
4.8.1	Findings.....	35
4.9	Organizational Performance Assessment and Management.....	36
4.9.1	Findings.....	37
5.0	Capacity Assessment at the Enabling Environment Level.....	38
5.1	Introduction.....	38
5.2	Findings.....	38
5.2.1	Strategies Aimed at Creating Enabling Environment for the Agriculture Sector Development.....	38
5.2.2	Enabling Environment for Participatory Planning Process.....	39
5.2.3	Policies Aimed at Creating Enabling Environment for the Agriculture Sector Development.....	40
6.0	SLARI Capacity Development Recommendations.....	41
6.1	Research Scientists Requirements.....	41
6.2	Individual Level Capacity Development.....	42
6.2.1	Short-term Capacity Development.....	42
6.2.2	Long-term Capacity Development.....	43
6.3	Organizational Level Capacity Development.....	44
6.4	Enabling Environment Level Capacity Development.....	45
	References.....	55
	Annexes.....	56
Annex 1.1:	Terms of Reference and Scope of Services.....	56
Annex 2.1:	List of people who participated in the capacity assessment.....	59
Annex 3.1:	The main duties that may be performed by the middle level research managers and research scientists.....	60
Annex 5.1:	Summary of some of the policies that impact on the agricultural sector development.....	65
Annex 6.1:	SLARI research scientist’s level of training and required long-term training by centres.....	68

ABBREVIATIONS AND ACRONYMS

APVC	Agricultural Product Value Chain
CAADP	Comprehensive African Agricultural Development Programme
CGIAR	Consultative Group on International Agricultural Research
CORAF	West and Central Africa Council for Agriculture Research and Development
FAAP	Framework for African Agricultural Productivity
FARA	Forum for Agricultural Research in Africa
FFRC	Freetown Fisheries Research Centre
GDP	Gross Domestic Product
IAR4D	Integrated Agricultural Research for Development
IARCs	International Agricultural Research Centres
KFTCRC	Kenema Forestry and Tree Crops Research Centre
KHCRC	Kabala Horticultural Crops Research Centre
MAFFS	Ministry of Agriculture, Forestry and Food Security
MDGs	Millennium Development Goals
MLWRC	Magbosi Land and Water Research Centre
NARIs	National Agricultural Research Institutes
NSF4	Networking Support Function 4
NARC	Njala Agricultural Research Centre
NARCC	National Agricultural Research Coordinating Council
RARC	Rokupr Agricultural Research Centre
SLARI	Sierra Leone Agricultural Research Institute
TLRC	Teko Livestock Research Centre
WECARD	West and Central African Council for Agricultural Research and Development

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It is our hope that the findings of this study will go a long way in assisting the SLARI management to develop and operationalize an effective and efficient capacity development programme for building institutional and individual capacities required for implementing its new strategic plan. We have enjoyed very much carrying out this assignment and hope that we have delivered on the expected outputs of the assignment and that our performance has met both the FARA's and SLARI's expectations. We look forward to our continued partnership and collaboration in similar future activities.

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EXECUTIVE SUMMARY

1.0 SLARI Strategic Direction and the Need for Capacity Assessment

1.1 Agricultural research in Sierra Leone has made significant contributions towards improvement of the agricultural production and rural development in the past. In order to strengthen the role of agricultural research, the Government established the Sierra Leone Agricultural Research Institute (SLARI) through an Act of Parliament as the country's agricultural research and agricultural technology generating body for the benefit of the farming, fishing and forestry sectors. When fully operational, SLARI shall be composed of seven research centres spread throughout the country.

1.2 Taking cognizance of the developments taking place at the national, regional and international levels, SLARI has developed this Strategic Plan for the period 2012-2021. The Strategic Plan is tailored to strategically position SLARI to contribute significantly to the development of the agricultural sector. From the regional and global perspective, the Strategic Plan is in line with the Comprehensive African Agricultural Development Programme (CAADP); West and Central African Council for Agricultural Research and Development (CORAF/WECARD); and the Millennium Development Goals (MDGs).

1.3 The SLARI guiding Vision that requires the Institute and its stakeholders and partners to stretch their future expectations, aspirations and performance is to see “**Improved and sustainable broad-based agricultural growth**”. The Mission statement that expresses the fundamental purpose and business of SLARI is “**To enhance sustainable productivity, commercialization and competitiveness of the agricultural sector through generation and promotion of innovative agricultural technologies and empowerment of stakeholders**”.

1.4 Given the institutional strategic direction, SLARI has identified five result areas that are necessary and sufficient to deliver on the institutional specific objective of **generating and promoting innovative agricultural technologies and empowerment stakeholders**. Attainment of this Specific Objective will contribute significantly to the realization of the overall institute's General Objective of **enhancing sustainable productivity, commercialization and competitiveness of the agricultural sector**. The five results that are designed to position SLARI strategically as the key driver for enhancing productivity, commercialization and competitiveness of the agricultural sector include:

- Result 1:** Appropriate agricultural product value chains technologies and innovations **generated and promoted.**
- Result 2:** Appropriate markets and marketing strategies for enhancing agricultural product value chains **developed and promoted.**
- Result 3:** Appropriate policy options for enhancing agricultural product value chains **facilitated and advocated.**
- Result 4:** Capacity for implementing agricultural product value chains research **strengthened.**
- Result 5:** Appropriate mechanisms for managing, sharing and up scaling agricultural knowledge, information and technologies **established and operationalized.**

1.5 In order to position itself strategically as a key driver in the transformation of the agricultural sector from subsistence to a commercial and profitable business enterprise, SLARI has adopted the Agricultural Product Value Chain (APVC) approach to research for development

within the framework of Integrated Agricultural Research for Development (IAR4D). The adoption of this approach to research requires SLARI to shift focus from production of commodities to differentiated agricultural products including increased value-addition to commodities within the rural areas and development and promotion of new products that fit the demands of the target market. This would require strengthening of capacity beyond the simple training and, therefore, a need for development and operationalization of effective and efficient capacity development programme was identified during the development of the SLARI Strategic Plan. This need for strengthening of capacity for implementing APVCs research was subsequently addressed as one of the institutional level result areas.

1.6 It is against this background that the Networking Support Function Four (NSF4) of Forum for Agricultural Research in Africa (FARA), in collaboration with the other FARA Networking Support Functions, initiated this capacity assessment of SLARI and its functional relationship with the wider Sierra Leone national agricultural research system. The purpose of this assignment was, therefore, to undertake assessment of capacity needs for innovation of the Sierra Leone Agricultural Research Institute.

2.0 Capacity Assessment at the Individual Level

2.1 The capacity of SLARI is embedded in the ability of its individuals to work together within established rules and values, and to interact with a wide range of organizations involved in agricultural research for development that share common objectives. The individual level capacity assessment considers the individual's capacity to function efficiently and effectively within the organization and within the broader environment. The assessment at this level was, therefore, designed to assess individual capacity gaps for top level research managers; middle level research managers and research scientist so that training and development plans can then be prepared to address them.

2.2 The current status of research scientists in all the SLARI centres were found to be very low except for NARC and RARC centres that have some core scientific staff. In addition to this, majority of the current research scientists in SLARI centres is clustered around the over 41 years age range. All the centres have very few young scientists in the under 40 years age range. Over 36.5% of the total research scientists in SLARI are in the age range of 51+ and are, therefore, nearing retirement. The implication of this age distribution is that in the next 10 years, this proportion of scientists will retire from active service and will no longer be available for effective agricultural research. This 10-year period should, therefore, be crucial in developing replacement research scientists to take over from the retiring ones.

2.3 Currently, SLARI has a total of 63 research scientists deployed in its seven research Centres and the Headquarters. Of the total number of research scientists, 14.3, 73.0 and 12.7% have acquired Doctorate, Masters and Bachelors level of training. The current and projected SLARI research scientists are clustered in the broad research disciplines of production, improvement, protection and disease control. Although this is not a very bad situation for SLARI yet, the trend should not be allowed to continue and should be corrected particularly considering the Institute's adoption of the APVC approach to research for development within the IAR4D framework that requires addressing of constraints along the whole product value chain from production to consumption continuum.

3.0 Job Descriptions and Performance Gaps

3.1 Job analysis is the process of compiling, recording and interpreting duties and tasks relating to essential features of individual job. A job is a collection of major duties which comprise the responsibilities of a particular position, while a duty is a segment of the work performed in a job and usually consisting of several tasks. A task is a distinct, identifiable work activity which comprises a logical and necessary step in the performance of a duty. Job descriptions are a management tool to define what work is to be performed and how the many duties to be carried out are to be divided and allocated into manageable work units. Job descriptions are an important part of a human resource development plan because it outlines in clear terms what the job holder is expected to do.

3.2 In performance based management organizations, the duties at the highest level are normally stated in a format that can be easily cascaded down to all levels of the organization. The core functions for the highest level in a research organization such as SLARI may be organized around the following broad strategic management areas of focus:

- (i) Research planning and management.
- (ii) Generation and promotion of knowledge, information and technologies.
- (iii) Knowledge management and scaling up of technological innovations.
- (iv) Human resource planning, development and management.
- (v) Financial resource planning, mobilization and management.
- (vi) Physical resources planning, development and management.
- (vii) Corporate governance, communication and marketing.

Given this understanding and considering the SLARI's move towards performance contracting in line with the government's directives, an attempt was made to outline the main duties performed under each of the broad strategic management areas of focus at the top level research managers, middle level research managers and research scientist's level but reduced in scale and scope at each specific level of operation.

3.3 The jobs performed by the top level research managers are at the institutional/centre levels. The general job description for the top level research managers is, therefore, to ensure effective and efficient development, implementation and management of research plans so as to deliver the institute and agricultural sector mission and mandate. Likewise, the jobs performed by the middle level research managers and research scientists are mostly at the centre/programme and programme/project levels respectively. The main duties performed by the top level research managers under each of the broad strategic management areas of focus were, therefore, cascaded down to the middle level research managers and research scientist's level but reduced in scale and scope at each level to centre/programme and programme/project focus for better alignment and outcome mapping.

3.4 Performance gap is the difference between the expected level of performance and the actual performance. Performance gap is the result of gaps in competency and organizational constraints. Gaps in competency can occur at the technical and managerial levels. The research scientist's technical and managerial knowledge and skills were assessed along the broad strategic management areas of focus that form the basis for their job description and duties allocation. The research scientists were found to be very clear on their technical performance gaps related to higher academic degrees than their managerial knowledge and skills gaps. However, a number of the research scientists were found to have had some on-the-job experience on management and leadership.

4.0 Capacity Assessment at the SLARI Organizational and Enabling Environment Levels

4.1 The organizational level of any institution is expected to make informed interpretation and application of the rules of the game spelt out at the enabling environment level and ensures that its players (the staff) are well aware of the rules of the game and play by them in carrying out their research obligations/functions. In order to make an assessment of the organizational level capacity of SLARI, the following eight capacity development strategic areas of focus that are most commonly encountered in performance-focussed agricultural research organizations were analyzed (i) Research programming and management; (ii) Human resource development and management; (iii) Financial resource mobilization and management; (iv) Physical infrastructure development and management; (v) Organizational leadership and management; (vi) Corporate governance and process management; (vii) Organizational governing and operating/management structure; and (viii) Organizational performance assessment and management.

4.2 These capacity development strategic areas of focus have been shown to be the main domains where capacity change happens most frequently and, therefore, can drive the formulation of a capacity development response in SLARI. The eight strategic areas of focus are not necessarily distinct as they spill over and reinforce one another. An attempt was made to assess what functional capacities are available or needed for optimal effectiveness and efficiency within the eight capacity development strategic areas of focus at the SLARI organizational level. On the basis of this analysis, the main areas that needed improvement under each of the capacity development strategic area of focus were identified.

4.3 The enabling environment level represents the broad national context within which agricultural research for development operates. It is concerned with policy at the highest levels in government, the socioeconomic conditions that enable or constrain agricultural research for development. This level can have immense influence over what happens at the lower levels. Due to the limited time and resources allocated to this assignment, the study was not able to carry out detailed analysis of the enabling environment relevant to SLARI's operating environment. However, limited interviews and discussions with the participants of the facilitated capacity assessment workshop that was attended by research managers, research scientists and some key stakeholders as well as reviews of the Government's effort in putting in place enabling environment for the agriculture sector development in Sierra Leone indicate that there is good progress being made towards this end.

5.0 SLARI Capacity Development Recommendations

5.1 The findings on the status of the research scientists in terms of current complement, age and gender distribution, level of training and disciplinary mix paint a very gloomy picture for SLARI. Even NARC and RARC centres that are currently considered to be functional are operating below half of the required research scientist complement. Given this state of affairs, it is recommended that:

(i) Serious effort should be made to put in place at least half of the required staff complements for each research centre and headquarters if meaningful research is to be conducted. The recruitment of the required research scientists should be geared towards attracting highly qualified and competent staff that can be developed further to assume higher research responsibility. In this regard, the Institute may need to have a policy of recruiting primarily at the Master's level. However, recruitment of good first degree graduates with a

minimum of Second Class Honours-Upper Division may be considered in areas where Masters degree holders are not available.

(ii) The SLARI Strategic Plan for the period 2012-2021 has been designed to position the Institute strategically to play a critical role in the transformation of the smallholder agriculture from subsistence to an innovative, commercially-oriented and modern agricultural activity as envisaged in NSADP-Smallholder Commercialization Programme. This transformation is expected to be achieved through the adoption of APVC approach to research for development. In view of this, SLARI should put in place research scientists in the right mix of age, gender and research disciplines/areas of specialization capable of addressing the challenges experienced along the whole APVCs continuum. Given this understanding, the main guiding principles for human resource planning and staffing in SLARI should be multidisciplinary mix of research scientists, staff ratios and succession planning. The succession planning should be aimed at ensuring that young in-coming staff have reasonable period to work and learn from the experienced mature staff.

(iii) The scientists-technical-administrative staff ratio of 1:2:4 can be applied in general bearing in mind that some programmes may have smaller ratios while others may have higher ratios. The ratios should, therefore, not be applied uniformly but should depend on each centre and the complexity of the programmes. The projected staffing needs of SLARI will need to take into account the current changes in the institution, agricultural sector and national development. Some of these changes and demands include the need for sustainable funding of agricultural research, technology transfer, application of new frontiers of science, policy analysis and development as well as managing new programmes among others.

(iv) In order to be able to attract, retain and effectively utilize human resources with the right and specific knowledge, skills, attitudes and motivations, SLARI will need to put in place a well-designed grade, promotion and reward system.

5.2 In order to become and remain productive, a research scientist requires both formal and on-the-job training. Research activities are, by their very nature, highly skill-intensive. Some of these skills are initially acquired by formal academic training. However, to maintain up-to-date knowledge and skills in their areas of specialization, research scientists must receive further specialized training on regular basis throughout their career. In order to meet the scientific human resource requirement, SLARI will, therefore, need to develop and operationalize appropriate apprentice-to-professional research staff development programme characterized by rather specific training needs at various stages of their career development.

5.3 In order to maintain up-to-date knowledge and skills of research scientists in their respective areas of specialization, SLARI will need to develop and operationalize an appropriate short-term capacity development programme. The short-term training courses under this programme should be offered to research scientists to enable them acquire new knowledge, skills, techniques, methods and attitudes. The aim of the short-term training courses should be to improve the research scientist productivity, job satisfaction, motivation and leadership as well as maintaining their scientific and professional competence. The short-term training courses should be needs-based, specific and goal-oriented and should take a variety of forms ranging from structured courses to informal activities.

5.4 The individual level development of knowledge, skills and attitudes of top level research managers, middle level research managers and research scientists should be done using different

modes of training. Some of the available short- and long-term modes of training that SLARI can use include (i) induction training; (ii) on-the-job coaching and mentoring; (iii) study tours, workshops and conferences; (iv) technical short-term courses; (v) postdoctoral and research attachment fellowships; (vi) agricultural research management training; and (vii) long-term postgraduate training. Of the seven modes of training, agricultural research management is the least mode of training undertaken in developing countries National Agricultural Research Institutes (NARIs). As a result of this, many NARIs with adequate financial, physical and human resources have ended up being ineffective and less productive in technology generation and transfer.

5.5 Academic and professional training enable staff to gain certificates required for advancement as prescribed in schemes of service. This type of training usually takes one to four years, depending on the type of training and is offered at training institutions such as universities and colleges either within or outside the country. SLARI should, therefore, develop and implement an appropriate long-term capacity development programme. Since training in universities, colleges and institutions have minimum requirements for admission, the ability to undertake postgraduate training should be an important criteria in the recruitment of new graduates to the Institute. Opportunities for postgraduate training should be made available for young scientists early in their careers but after a period of at least one year of apprenticeship.

5.6 Postgraduate training can be offered within and outside the country. However, training in the country should be preferred in disciplines where facilities, standards and supervision capacity are adequate and where the relevance of the training is high. In view of this, SLARI should develop and strengthen relations and partnerships with local universities so as to influence their content of postgraduate training and to collaborate in the required theses research. This approach has a double advantage of solving the identified agricultural research priorities while at the same time providing opportunities for the scientists to earn their postgraduate degrees and improve their performance and motivation.

5.7 In cases where postgraduate training is undertaken outside the country, SLARI should seek ways of improving the relevance of the training through special arrangements with the relevant universities and funding organizations. These arrangements should include (i) postgraduate candidates returning back to Sierra Leone after taught course work to collect data for their dissertations and theses on research topics of national priority; and (ii) postgraduate candidates completing some of the course work at overseas universities and return to do their dissertations and theses at a university in Sierra Leone. Over the long-term, these arrangements would strengthen the national postgraduate training capacity while at the same time responding to issues of cost-effectiveness and relevance of training.

5.8 Postgraduate training opportunities at the Master's level should be made available to all trainable research scientists in the Institute. Research scientists with Masters degrees should then advance in the scheme of service depending on their individual performance. Training at Doctorate level should not be offered to all research scientists with Masters degrees. The doctoral level training should be limited to cases where specialization is required for guiding and leading research programmes and projects. However, research scientists wishing to undertake Doctorate training locally and who are willing to use their usual research activities as basis for their theses should be encouraged and supported to do so as long as there is only a minimal cost to the Institute.

5.9 The assessment results of the enabling environment indicate that there is a concerted government effort to establish enabling environment for national economic growth and agricultural sector development. However, there is need for further assessment to establish the extent of coverage and identify areas of enabling environment that have not been addressed. This assessment should be geared towards establishing the impact of these environmental forces on SLARI's Mission and performance; the ways in which the environment is friendly or hostile; and the major opportunities and risks resulting from the environment. This information would then enable SLARI to develop appropriate strategies for building capacity and competence to both influence and adapt to the environment as it evolves.

5.10 The role of SLARI in the establishment of the enabling environment is to identify the main facilitating or constraining factors or dimensions in its operating environment and then lobby and advocate for suitable reforms to be put in place so as to create the desired enabling environment. In carrying out the lobbying and advocacy, SLARI may need to collect, analyze and provide data and information on some of the constraining aspects and dimensions of the current enabling environment to justify why and in what way the particular aspect or dimension is constraining its performance. This information will then enable the policy makers to make informed decisions and evidence-based policies.

1.0 BACKGROUND

1.1 Introduction

Agriculture has remained as the engine of the Sierra Leone's economy whose performance impacts heavily on nearly all other sectors. It is the mainstay of the national economy and provides the basis for the development of the other sectors. By contributing raw materials to the manufacturing/industrial sector, the agricultural sector has a definite role in Sierra Leone's progress towards becoming a food secure and newly industrialized country. For the agricultural sector to improve on its contribution to the overall goal of national economic growth, wealth creation, food security and poverty alleviation, the agricultural sector must be transformed from subsistence to a commercial and profitable business enterprise.

Since independence, the economy of Sierra Leone has gone through bouts of positive and negative growth rates. Many factors have contributed to this performance but the most significant is the war that ravaged the economy in the 1990s. The current medium-term macroeconomic objectives of the Sierra Leone Government are to promote higher economic growth, further stabilise the economy and create an economic environment conducive to labour-intensive growth and poverty reduction. Specifically, the aim is to raise real Gross Domestic Product (GDP) growth by 6-7% in the coming years. This growth is expected to come mainly from putting into production under-utilized

1.2 Sierra Leone Agricultural Research Institute

Agricultural research in Sierra Leone has made significant contributions towards improvement of the agricultural production and rural development in the past. In order to strengthen the role of agricultural research, the Government established the Sierra Leone Agricultural Research Institute (SLARI) through an Act of Parliament as the country's agricultural research and technology generating body for the benefit of the farming, fishing and forestry sectors. When fully operational, SLARI shall be composed of seven research centres spread throughout the country. The centres include (i) Njala Agricultural Research Centre; (ii) Rokupr Agricultural Research Centre; (iii) Kabala Horticultural Crops Research Centre; (iv) Teko Livestock Research Centre; (v) Freetown Fisheries Research Centre; (vi) Kenema Forestry and Tree Crops Research Centre; and (vii) Magbosi Land and Water Research Centre.

In order to align its activities to the Government focus on food security, poverty reduction, employment creation and commercialization of the agricultural sector, SLARI has developed a new Strategic Plan covering the period 2012-2021 (SLARI, 2011a) and a five-year Operational Plan (SLARI, 2011b) and an Investment Plan (SLARI, 2011c) as a first phase for operationalizing the strategic plan. The Strategic Plan is tailored to strategically position SLARI to contribute significantly to the development of the agricultural sector. From the regional and global perspective, the Strategic Plan is in line with the Comprehensive African Agricultural Development Programme (CAADP); the West and Central African Council for Agricultural Research and Development (CORAF/WECARD); and the Millennium Development Goals (MDGs).

1.2.1 Strategy for Responding to the Agricultural Sector Development Challenges

In order to position itself strategically as a key driver in the transformation of the agricultural sector from subsistence to a commercial and profitable business enterprise, SLARI has adopted

the Agricultural Product Value Chain (APVC) approach to research for development within the framework of Integrated Agricultural Research for Development (IAR4D). The adoption of this approach to research requires SLARI to shift focus from production of commodities to differentiated agricultural products including increased value-addition to commodities within the rural areas and development and promotion of new products that fit the demands of the target market.

The adoption of the APVC approach to research for development has been necessitated by the renewed focus on agriculture and agribusiness as priority sectors for spurring economic growth in Africa with calls for development of APVCs that integrate producers and markets to make the agricultural sector more responsive to consumer demands. The APVC approach to research for development implies expansion of the research portfolio to components such as post-harvest processing, marketing and internalization of consumer needs. The APVC approach places farmers and other actors/users at the centre of innovative processes through establishment of innovation platforms. The APVC concept traces product flows by showing value additions at different stages; identifies key actors and their relationships in the chain; identifies enterprises that contribute to production, services and required institutional support; identifies bottlenecks preventing progress; provides a framework for sector-specific action; identifies strategies to help local enterprises to compete and to improve earning opportunities; and identifies relevant stakeholders for programme planning.

1.2.2 Institutional Strategic Direction

SLARI is mandated to implement the agricultural policies and strategies of the Government of Sierra Leone. It is also supposed to spearhead the implementation of CAADP Pillar IV in Sierra Leone. In view of this, the SLARI Vision and Mission statements confirm the institute's commitment to the national, sub regional and regional policy and priorities aimed at creating economic development through agriculture and meet the MDGs of reducing poverty and eradicating hunger.

The SLARI guiding Vision that requires the Institute and its stakeholders and partners to stretch their future expectations, aspirations and performance is to see “**Improved and sustainable broad-based agricultural growth**”. The Mission statement that expresses the fundamental purpose and business of SLARI is “**To enhance sustainable productivity, commercialization and competitiveness of the agricultural sector through generation and promotion of innovative agricultural technologies and empowerment of stakeholders**”.

1.2.3 Institutional Level Results

Given the institutional strategic direction, SLARI has identified five result areas that are necessary and sufficient to deliver on the institutional specific objective of **generating and promoting innovative agricultural technologies and empowerment stakeholders**. Attainment of this Specific Objective will contribute significantly to the realization of the overall institute's General Objective of **enhancing sustainable productivity, commercialization and competitiveness of the agricultural sector**.

The five results that are designed to position SLARI strategically as the key driver for enhancing productivity, commercialization and competitiveness of the agricultural sector include (i) Appropriate agricultural product value chains technologies and innovations **generated and promoted**; (ii) Appropriate markets and marketing strategies for enhancing agricultural product

value chains **developed and promoted**; (iii) Appropriate policy options for enhancing agricultural product value chains **facilitated and advocated**; (iv) Capacity for implementing agricultural product value chains research **strengthened**; and (v) Appropriate mechanisms for managing, sharing and up scaling agricultural knowledge, information and technologies **established and operationalized**.

In the new Strategic Plan, SLARI has adopted a programme approach to its research planning and management. The approach is expected to ensure effective alignment to the national level and agricultural sector planning and policy documents as well as sub regional and regional programmes and initiatives. The broad programmes, to be implemented across research centres, are expected to contribute to the delivery of the SLARI institutional level results. This shall be achieved by cascading the institutional level results down to each programme but reduced in scale and scope to the programme specific area of interest.

1.3 The Need for Capacity Assessment for SLARI

Research to address identified challenges/constraints under different APVCs in SLARI shall be carried out within the framework of IAR4D that recognizes the need for collective action by involving a broad range of stakeholders and multiple knowledge sources that can be used to address complex development challenges. The IAR4D approach to research shall be guided by four interactive process oriented support principles that include (i) integration of perspectives, knowledge and actions of different stakeholders around a common theme; (ii) integration of learning that stakeholders achieve through working together; (iii) integration of analysis, action and change across different dimensions of development; and (iv) integration of analysis, action and change at different levels of spatial, economic and social organization. The implementation of IAR4D shall be achieved by (i) bringing about organizational and institutional change, capacity building for project teams and institutions; (ii) knowledge management and information sharing; (iii) monitoring, evaluation, impact assessment and lesson learning; and (iv) the integration of markets, policies, natural resource management and productivity into innovation processes carried out through innovation platforms.

The adoption of APVC approach to research for development within the framework of IAR4D implies expansion of the research portfolio to components such as post-harvest processing, marketing and internalization of consumer needs. The approach involves working with all players along different APVCs from resources, production, processing, marketing to consumption. The APVC approach is characterized by increased vertical coordination of many actors and would be expected to demand for more integration and coordination of all different service providers around priority APVCs. This would require strengthening of capacity beyond the simple training and, therefore, a need for development and operationalization of effective and efficient capacity development programme was identified during the development of the SLARI Strategic Plan. This need for strengthening of capacity for implementing APVCs research was subsequently addressed as one of the institutional level result areas.

It is against this background that the Networking Support Function Four (NSF4) of Forum for Agricultural Research in Africa (FARA), in collaboration with the other FARA Networking Support Functions, has initiated this capacity assessment of SLARI and its functional relationship with the wider Sierra Leone national agricultural research system. The purpose of this assignment was, therefore, to undertake assessment of capacity needs for innovation of the Sierra Leone Agricultural Research Institute. The objectives for the assignment included:

- (i)** Diagnostic audit of SLARI identifying the bottlenecks, constraints to, and opportunities for agricultural innovation.
- (ii)** Identification of specific innovation capacity strengthening needs.
- (iii)** Recommending capacity strengthening investment priorities of SLARI within the wider agricultural innovation systems of Sierra Leone.

More specifically, the assignment objectives were to be attained by undertaking the following:

- (i)** Develop a methodology, consultation plan and appropriate survey instruments for the assignment.
- (ii)** Undertake comprehensive assessments of the human, organizational and institutional capacity to undertake innovations along the respective commodity value chains of focus by the SLARI research centres.
- (iii)** Compile and submit assessment reports and analytical briefs.
- (iv)** Provide recommendations for innovation capacity needs and institutional change.
- (v)** Present the assessment report for validation before a SLARI/FARA constituted panel.

2.0 SLARI CAPACITY ASSESSMENT APPROACH AND METHODOLOGY

2.1 Introduction

Capacity development has been defined by many practitioners as the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time (UNDP, 2008; DFID, 2003). Capacity development is not a one-off intervention but an interactive process of design-application-learning-adjustment. It is not something that can be built through a series of carefully planned and executed activities that follow a clear and detailed plan or blueprint with specific timeframes and strict budgets. It is an organic process of growth and development involving experimentation and learning as it proceeds. Many practitioners, therefore, now speak of capacity development rather than capacity building to emphasize that it is a process rather than a blueprint.

Capacity assessment is the process of analyzing the desired capacities against existing capacities. This process generates an understanding of capacity assets and needs that can serve as input for formulating a capacity development response (UNDP, 2008; DFID, 2003). The capacity assessment process can also set the baseline for continuous monitoring and evaluation of progress against relevant indicators and help create a solid foundation for long-term planning and implementation. Capacity assessment can be conducted at different points of a planning or programming cycle. Capacity assessment can serve a variety of purposes. It can provide the starting point for formulating a capacity development response; act as a catalyst for action; confirm priorities for action; build political support for an agenda; offer a platform for dialogue among stakeholders; and provide insight into operational hurdles in order to unblock a programme or project.

Ideally, the process of capacity development consists of five strategic steps. The first step is an assessment to define present capacity within the system. It establishes the baseline and addresses the basic question - *where are we now?* The second step looks ahead to the future desired state, the vision of what capacity is required in the future and asks the question - *where do we want to go?* The third step compares the present situation and future desired state to identify the capacity gaps and plans strategies and actions designed to fill these gaps and achieve the desired goals - *how do we get there?* The fourth step is the implementation phase, fulfilling the strategies and undertaking the planned capacity development activities in order to meet the defined objectives - *what actions do we take?* The final step is monitoring and evaluation to feedback experiences into the planning phase - *how do we stay there?*

Capacity development is not a linear process. The steps are interlinked and overlap, forming a continuing cycle of development and change according to the prevailing circumstances as shown in Figure 2.1. Given this understanding, the process of capacity development can be organized into the following logical and sequential steps:

- (i) Engage stakeholders on capacity development.
- (ii) Assess capacity assets and needs.
- (iii) Formulate a capacity development response.
- (iv) Implement a capacity development response.
- (v) Monitor and evaluate capacity development.

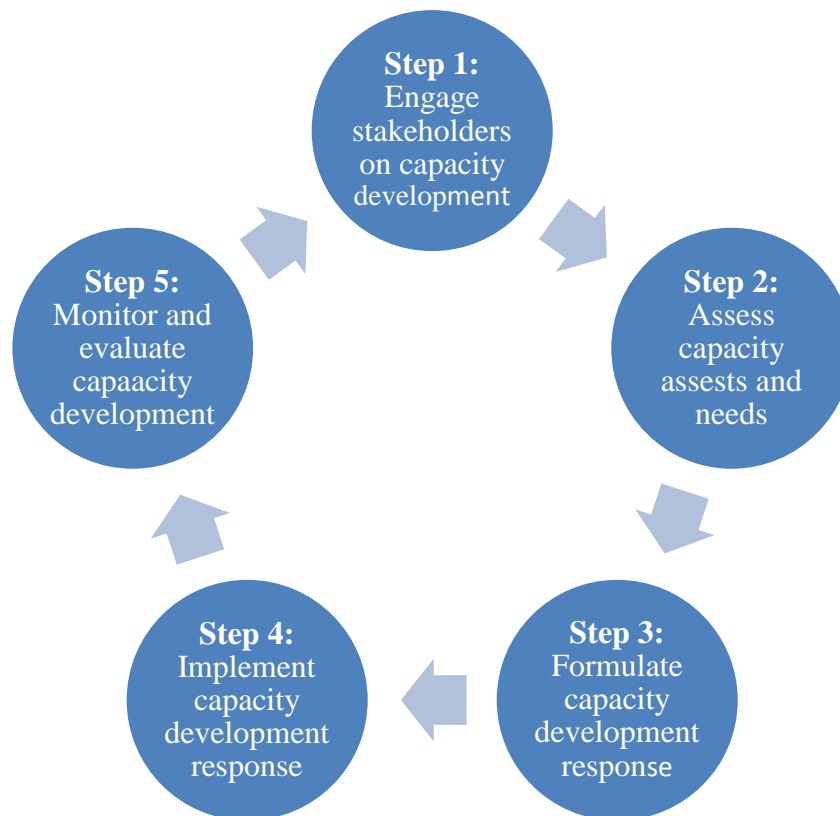


Figure 2.1: Sequential steps in capacity development process

2.2 SLARI Capacity Assessment Framework

According to the terms of reference for this study, the entry point for this SLARI capacity assessment assignment was the second step on the assessment of capacity assets and needs. In selecting this entry point, it was assumed that the first step on the engagement of stakeholders on capacity development had already occurred during the planning exercise that involved the development of the SLARI Strategic Plan, Operational Plan and Investment Plan in which strengthening of capacity for implementing agricultural product value chains research was identified as one of the institutional level result areas. In view of this, the stakeholder engagement and consensus building was seen as an integral part of each subsequent step of capacity development process.

The results of the second step on the assessment of capacity assets and needs were used to attempt the third step on formulation of a capacity development response. Of the two steps, the second step was perhaps the least well developed and, at the same time, the most vital. Without a proper understanding of what currently exists and what is needed, there is a good chance that inappropriate measures and actions will be initiated. The assessment of the SLARI capacity needs was carried out in three phases that included (i) assessment of the existing capacities; (ii) assessment of the required capacities; and (iii) identification of the capacity gaps between the existing and the required capacities.

The first phase of assessing existing capacity was expected to produce useful information. The second phase of looking at future capacity was, however, not expected to be straight forward because it largely depended on policies and strategies for future development and these may not always be as clear as they should be. This was expected to have a knock-on effect on the third

phase of assessing the gaps and hence on developing strategies to fill the gaps which was also not expected to be a straight forward exercise. In carrying out capacity assessment, it is recognized that capacity resides in different levels that included **(i) the individual level; (ii) the organizational level; and (iii) the enabling environment level** (North, 1991; DFID, 2003). The three levels provided a structure that allowed capacity development to be examined and analyzed.

2.2.1 Capacity Assessment Point of Entry

In deciding on the point of entry for capacity assessment, any of the three levels (individual, organizational and enabling environment) can be the point of entry. The entry point for this assignment was chosen as the SLARI organizational level. This was because SLARI organization provides the framework for individuals to work together for a common vision and act on a shared set of goals. However, since the levels of capacity are interdependent and complementary, it is rarely, if ever, sufficient to explore capacity assets and needs at only one level. Regardless of the point of entry, therefore, it was prudent to expand to other levels by “zooming in” and “zooming out”. The performance of SLARI was expected to depend on the performance of its staff individually or collectively. In this regard, therefore, it was necessary to “zoom in” to examine issues in the individual level that might affect the Institute’s performance. Likewise, the performance of SLARI was expected to be influenced by the enabling environment. In view of this, it was necessary to “zoom out” to examine issues in the enabling environment that might affect the Institute’s performance.

2.2.2 Capacity Development Strategic Areas of Focus

The second dimension in the approach for carrying out this capacity assessment assignment for SLARI looked at eight capacity development strategic areas of focus that are most commonly encountered in performance-focussed agricultural research organizations. The eight capacity development strategic areas of focus that have been shown to be the main domains where capacity change happens most frequently included (i) Research programming and management; (ii) Human resource development and management; (iii) Financial resource mobilization and management; (iv) Physical infrastructure development and management; (v) Organizational leadership and management; (vi) Corporate governance and process management; (vii) Organizational governing and operating/management structure; and (viii) Organizational performance assessment and management.

2.3 SLARI Capacity Assessment Process

The process for conducting steps 2 and 3 on assessment of capacity assets and needs, and formulation of capacity development response for SLARI consisted of five steps that included (i) mobilization and design; (ii) conducting the capacity assessment; (iii) analysis and interpretation of the results; (iv) formulation of capacity development response; and (v) validation of the findings as shown in Figure 2.2.

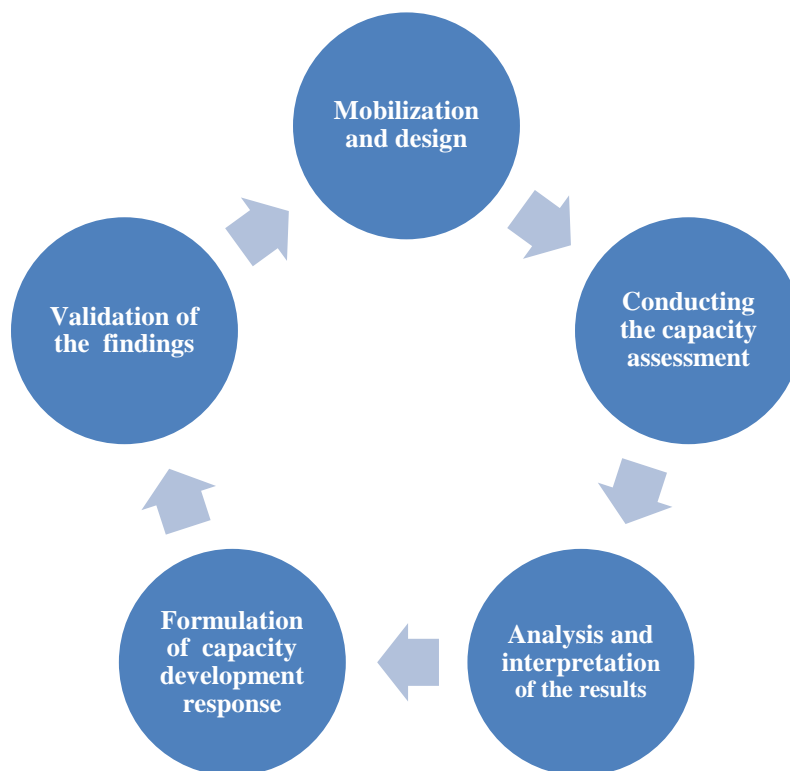


Figure 2.2: Sequential steps in capacity assessment and formulation of development response for SLARI

2.3.1 Mobilize and Design

Engaged stakeholders and a clear design are key to a successful capacity assessment. In view of this, the design for SLARI capacity assessment process was driven by three guiding questions that included (i) capacity for why? (ii) capacity for whom? and (iii) capacity for what? The first step of the capacity assessment process on mobilization and design focussed on answering these questions. More specifically, it covered (i) engagement of stakeholders and (ii) clarification of objectives and expectations with the primary clients (FARA/NSF4 and SLARI).

2.3.2 Conducting the Capacity Assessment

In conducting the actual capacity assessment, inputs were collected either quantitatively or qualitatively depending on the capacity issue and the stakeholders involved. In cases where a quantitative approach was selected, appropriate ranking scheme was designed and used to determine the level of existing and desired capacities. A key design consideration was on how the data and information collected was to be analysed, reported and utilized. Collecting a wealth of input is pointless if it will not lead to actionable results. In practice, there are multiple sources and collection techniques that can be used to gather the required data and information. The selection of the methodologies and tools that were used in this capacity assessment depended on the available time and resources allocated for this assignment and included (i) desk reviews, (ii) focus group discussions, (iii) interviews, and (iv) observations.

(i) **Desk reviews:** Extensive desk reviews were made with a view of determining the scale and scope of the assessment. During these reviews, decision was made regarding which capacities need to be included in the assessment and how these capacities will be assessed. This

included decisions on the kinds of input to collect and appropriate collection techniques. In order to do this, relevant documentation and materials were collected and reviewed so as to develop an understanding of SLARI and its operating environment. The desk reviews also included relevant government policies, strategies and plans, laws and regulations. Given the limited time allocated to this study, the SLARI management was expected to provide the required documents expediently.

(ii) Focus group discussions: Focus group discussion is a rapid assessment, semi-structured data gathering method in which a purposively selected set of participants gather to discuss issues and concerns based on a list of key issues/themes. The focus group discussion has become extremely popular because it provides a fast way to learn from the target audience. It is also a cost-effective technique for eliciting views and opinions of prospective clients, customers and end-users. In agriculture, focus groups have been used to obtain insights into target audience perceptions, needs, problems, beliefs and reasons for certain practices. Because of the limited time allocated for this study, the focus group discussion was used only during the facilitated validation and capacity assessment workshop that was attended by research managers, research scientists and a few key stakeholders as shown in Annex 2.1. To keep the group discussion sessions on track while allowing respondents to talk freely and spontaneously, discussion guides were prepared and utilized. The discussion guides served as road maps in covering the list of topics and keeping the discussions on track. The number of items in the guide was kept to a minimum because the time allocated for this workshop was very short and did not leave enough time for in-depth discussion of various capacity issues.

(iii) Interviews: Interviews are best defined as a method of data collection which involves an interaction between an interviewer and an interviewee with the purpose of obtaining reliable information on capacity assets and gaps. A semi-structured interview is the most popular of all interviews because it offers flexibility to probe for details, allowing new questions to be brought up during the interview as a result of what the interviewee says. It is a conversation with a purpose. Semi-structured questions were prepared to guide interviews with SLARI staff and other key stakeholders in a fairly open framework designed to allow for focused and conversational two-way communication. However, the time and resources allocated for this study did not facilitate/allow visits to the SLARI centres and other relevant organizations to conduct further interviews either before or after the workshop. An attempt was made to get some responses to some of the interview questions through electronic interactions but the response was very discouraging.

Observation: General observation can provide important insights and can, therefore, be used to expose information not otherwise obtained by the other methods or to validate the collected information. However, given the limited time for this study, the observation methodology was not used extensively because it required visits to the actual work places.

2.3.3 Analysis and Interpretation of the Results

After completing collection of the required data and information using the various methods, the results were analysed and interpreted with a view of assessing the existing and needed capacities. The analysis of existing capacity assets and gaps were used to deduce the level of effort required to build on the assets and address the gaps. In some cases, there was a felt need for further exploration of certain areas for more in depth analysis through either additional follow-up assessments or informal discussions with some of the key stakeholders/informants. However, this was not possible due to time constraint and slow/lack of response to electronic requests.

2.3.4 Formulation of Capacity Development Response

The assessment of capacity and the resulting interpretation of its findings provided the starting point for the formulation of a capacity development response. The capacity development response was formulated as an integrated set of deliberate and sequenced actions designed to build momentum for the capacity development process. This was done by designing a combination of high-priority short-term initiatives and long-term activities corresponding to the targeted and scaled-down responses. These actions were expected to build on the existing capacity assets in addressing the identified capacity gaps at different levels.

2.3.5 Validation of the Findings

Before finalizing the results of the assessment and preparing the final assessment report, a draft report was prepared and submitted to the primary client for circulation to the key stakeholders for comments and consensus build on the findings and recommendations of the study. This was done so as to increase the level of trust among the key stakeholders and increase the credibility of the exercise so that ownership over the results is shared by all and a strong foundation is built for the way forward.

3.0 CAPACITY ASSESSMENT AT THE INDIVIDUAL LEVEL

3.1 Introduction

The capacity of an organization is embedded in the ability of its individuals to work together within established rules and values, and to interact with a wide range of organizations involved in agricultural research for development that share common objectives. The individual level of capacity assessment considers the individual's capacity to function efficiently and effectively within an organization and within the broader environment. It is the most structured and familiar part of capacity development. Indeed much of the criticism of capacity development programmes in the past is that they have been focused solely at the individual level, without paying sufficient attention to the organizational framework within which the individual operates. This trend could have been attributed to the fact that this level is considered the most critical or because it is the easiest to address. The assessment at this level is normally designed to assess individual capacity gaps so that training and development plans can then be prepared to address them. Increasingly, the dimensions of accountability and incentives, performance, values and ethics are becoming even more important at the level of individual capacity assessments.

Normally, the assessment of individual capacities is conducted according to staff categories. The common broad staff categories in a research institution such as SLARI include research managers, research scientists, technical support staff and administrative support staff. Each broad staff category is made up of sub categories that may include research managers (top and middle level); research scientists (programme coordinators and scientists), technical support staff (technologists, technical officers, technicians and technical assistants) and administrative support staff (personnel, accounts, supplies, secretaries, clerks, security, artisans, librarians, and cateresses among others). However, due to time constraint, this study concentrated only on assessment of capacity for research category of staff. There may be need to conduct individual capacity assessment for the other cadres of staff at a later date.

In order to make an assessment of existing capacity at the individual level, the following was carried out:

- Assessment of research scientist's requirement and level of training in terms of discipline/area of specialization; highest qualification and date acquired; and percentage time spend in research and management duties.
- Assessment of job description and duties performed at top level research managers, middle level research managers and research scientist's level.
- Identification of performance gaps in technical and managerial knowledge, skills and attitudes experienced at the top level research managers; middle level research managers and research scientist's level.

The data and information collected was used to identify short- and long-term capacity development needs for top level research managers; middle level research managers and research scientist. This was done conscious of the fact that training is not a panacea for improving low staff performance. This is because low staff performance may be due to various other factors that must be investigated to ensure that training is the right course of action to take. Some of these factors that affect staff performance include inadequate job design; poor motivation/reward system; lack of leadership and guidance; poor work conditions/environment; unclear vision and priorities; poor management support for research operations; and intra-group conflict, dissemination or grievances among others. Different institutional trainings need indicators that have direct implications for training and, therefore, serve as early warning systems that may

guide a research institution toward training have been developed. These indicators tell where gaps between the job requirements and abilities of individuals in an institutional context are likely to occur and, therefore, the need for training. Some of the institutional training need indicators under different aspects of management include the following:

- (i) **Organizational plans:** Projected changes in mandate or objectives and research priorities and changes in organizational governance and management structure.
- (ii) **Employee records:** Staff turnover, low performance rating and career paths and plans.
- (iii) **Research operations:** Acquisition of new research equipment, techniques or methodologies, fluctuations in research output and performance appraisal.
- (iv) **Staff selection policy:** Qualification of staff at functional levels and experience and training background.
- (v) **Morale factors:** Personnel friction, conflicts and poor leadership.
- (vi) **Job knowledge:** Technical aspects, administrative aspects and supervisory aspects.
- (vii) **Communication:** Poor written and oral communications, and poor flow of information up and down.
- (viii) **Supervision:** Lack of clarity in work assignments, planning and scheduling, and improper resolution of conflicts.

3.2 Findings

3.2.1 Total and Age Distribution of Research Scientists

The numbers of agricultural research scientists in most African National Agricultural Research Institutes (NARIs) do not seem to be related to the critical mass of scientists required for delivery of outputs approved in their strategic plans and that majority of the NARIs have not assessed their critical mass of research scientists required for undertaking agricultural research (Mukiibi and Youdeowei, 2005). Governments of some African countries have adopted a policy of rationalization/reduction of the civil service by non-replacement of staff leaving service through normal attrition. This policy has affected agricultural research scientists in the national agricultural research institutes in most of these countries leading to an aging cadre of staff devoid of new talents. The lack of a well-planned programme of replacement for agricultural research scientists, together with the complete absence of mentoring of young scientists is a serious weakness in the capacity development strategy for agricultural research and development in Africa.

Table 3.1 shows that the current status of research scientists in all the SLARI centres is very low except for NARC and RARC centres that have some core scientific staff. The same table also shows the age distribution of currently available research scientists and percentage time spent in research and management. Majority of the current scientists in SLARI centres is clustered around the over 41-year age range. All the centres have very few young scientists in the under 40-year age range. This age distribution is skewed and according to the UN convention standards which define people aged 36 and above as old, most SLARI research scientists can, by this standard, be regarded as old.

Over 36.5% of the total research scientists in SLARI are in the age range of 51+ and are, therefore, nearing retirement. The implication of this age distribution is that in the next 10 years, this proportion of scientists will retire from active service and will no longer be available for effective agricultural research. This 10-year period will, therefore, be crucial in developing replacement research scientists to take over from the retiring ones. SLARI has more male

research scientists than female. Since majority of small-scale farmers are women, the Institute may need to take deliberate steps to increase the number of female research scientists to at least 40% of the total number. At the moment, however, there is no cause for alarm if the age and gender distribution can be taken into consideration during recruitment of the additional required research scientists.

3.2.2 Research Scientists Level of Training

Table 3.2 shows the current status of research scientists by centre and level of training. Of the total number of research scientists, 14.3, 73.0 and 12.7% have acquired PhD, Masters and Bachelors level of training, respectively. The technical capacity/professionalism of a research institution is reflected by the number of highest degrees and the time they were acquired. In most developing countries, scientists in research institutes are professionally “young” than those in universities. This reflects a different career pattern for researchers at the institutes who are often employed as research assistants with a Bachelor’s degree before going back for higher degree training.

3.2.3 Disciplinary Mix of Research Scientists

Research scientists in African NARIs cover a wide spectrum of disciplines that include plant breeding, livestock management, animal diseases, plant pathology, insect pest management, agronomy, and soil science among others. However, most institutions are weak in social sciences, agricultural extension, animal breeding, agricultural engineering, food science and technology, weed science, forestry and agroforestry, biotechnology, biometrics, information technology, aquaculture and fisheries (Mukiibi and Youdeowei, 2005).

Analysis of distribution of the current and projected SLARI research scientists indicate that majority of them are clustered in the broad research disciplines of production, improvement, protection and disease control. Although this is not a very bad situation for SLARI yet, the trend should not be allowed to continue and should be corrected particularly considering the Institute’s adoption of the Agricultural Product Value Chains (APVC) approach to research for development within the framework of Integrated Agricultural Research for Development (IAR4D) that requires addressing of constraints along the whole product value chain from production to consumption continuum.

Table 3.1: Total and age distribution of research scientists and percentage time spend in research and management

Centre		Total no. of Scientists	Age distribution and percentage of the total				
			21-30	31-40	41-50	51-60	61+
1.0	Njala Agricultural Research Centre	22	2 (09.1%)	10 (45.4%)	4 (18.2%)	4 (18.2%)	2 (09.1%)
2.0	Rokupr Agricultural Research Centre	19	3 (15.8%)	4 (21.1%)	4 (21.1%)	6 (31.5%)	2 (10.5%)
3.0	Kabala Horticultural Crops Research Centre	1	0	0	0	1 (100.0)	0
4.0	Teko Livestock Research Centre	4	0	0	1 (25.0%)	2 (50.0%)	1 (25.0%)
5.0	Freetown Fisheries Research Centre	2	0	0	1 (50.0%)	0	1 (50.0%)
6.0	Kenema Forestry and Tree Crops Research Centre	6	1 (16.6%)	4 (66.8%)	0	0	1 (16.6%)
7.0	Magbosi Land and Water Research Centre	5	4 (80.0%)	0	0	0	1 (20.0%)
8.0	SLARI Headquarters	4	0	1 (25.0%)	1 (25.0%)	2 (50.0%)	0
Total Institutional Research Scientists Complement		63	10 (15.9%)	19 (30.1%)	11 (17.5%)	15 (23.8%)	8 (12.7%)
Percentage time spend in:		Research	100%	90%	80%	30%	10%
		Management	0%	10%	20%	70%	90%

Table 3.2: Current status of research scientists by centre and level of training

Centre SLARI and Headquarters		Current no. of scientists	Highest qualification and percentage of the total		
			PhD	MSc/Mphil	BSc/BA
1.0	Njala Agricultural Research Centre	22	2 (9.1%)	20 (90.9%)	0
2.0	Rokupr Agricultural Research Centre	19	3 (15.8%)	9 (47.4%)	7 (36.8%)
3.0	Kabala Horticultural Crops Research Centre	1	0	0	1 (100.0%)
4.0	Teko Livestock Research Centre	4	1 (25.0%)	3 (75.0%)	0
5.0	Freetown Fisheries Research Centre	2	0	2 (100.0%)	0
6.0	Kenema Forestry and Tree Crops Research Centre	6	1 (16.7%)	5 (83.3%)	0
7.0	Magbosi Land and	5	0	5	0

Water Research Centre			(100.0%)	
8.0 SLARI Headquarters	4	2 (50.0%)	2 (50.0%)	0
Total for SLARI	63	9 (14.3%)	46 (73.0%)	8 (12.7%)

3.3 Assessment of Job Descriptions and Duties

3.3.1 Introduction

Job analysis is the process of compiling, recording and interpreting duties and tasks relating to essential features of individual job. Job analysis is done for various reasons including (i) determination of training needs; (ii) preparation of job descriptions; (iii) compensation; (iv) selection and recruitment; and (v) performance among others. A job is a collection of major duties which comprise the responsibilities of a particular position, while a duty is a segment of the work performed in a job and usually consisting of several tasks. A task is a distinct, identifiable work activity which comprises a logical and necessary step in the performance of a duty.

Job descriptions are a management tool to define what work is to be performed and how the many duties to be carried out are to be divided and allocated into manageable work units. Job descriptions are an important part of a human resource development plan because it outlines in clear terms what the job holder is expected to do. Once this has been defined, training personnel can assist the members of the organization in conducting job analysis. This is aimed at assessing the knowledge and skills necessary to improve their performance and to contribute to the achievement of the organizational goals. Well designed and well disseminated job descriptions among staff (i) improves staff responsibilities; (ii) develop motivation and commitment; (iii) facilitates effective supervision; and (iv) promotes cohesive operation within the organization.

In performance based management organizations, the duties at the highest level are normally stated in a format that can be easily cascaded down to all levels of the organization. In SLARI, the highest level is that of Director General and, therefore, the duties at this level should be cascaded down to the line managers below this level but reduced in scale and scope at each level of operation. This is because the Director General expects to deliver on these duties through the sum totals of the line manager's duties. Likewise, the line managers expect to deliver on their duties through the sum totals of those directly below them and so forth. The core functions for the highest level in a research organization such as SLARI may be organized around the following broad strategic management areas of focus:

- (i) Research planning and management.
- (ii) Generation and promotion of knowledge, information and technologies.
- (iii) Knowledge management and scaling up of technological innovations.
- (iv) Human resource planning, development and management.
- (v) Financial resource planning, mobilization and management.
- (vi) Physical resources planning, development and management.
- (vii) Corporate governance, communication and marketing.

Ideally, therefore, these broad strategic management areas of focus are the ones that should form the basis for performance contract for the SLARI's Director General by indicating the main duties to be performed under each area of focus. These main duties to be performed under each

area of focus can then be cascaded down to all levels of the institute but reduced in scale and scope at each specific level of operation. The Performance Contract Annual Targets at each specific level of operation can then be organized around these main duties as tasks to be accomplished during each contracted period.

3.3.2 Findings

As mentioned earlier, this study concentrated only on research category of staff. The job descriptions and main duties performed under each job were done for the top level research managers, middle level research managers and research scientist. In the SLARI set-up, the top level research managers were taken to include the Director General, Deputy Director Generals and Centre Directors; while the middle level research managers was taken to include Deputy Centre Directors, Departmental/Division Heads and Programme Coordinators. The research scientist's level was taken to include project leaders, task leaders and other scientists with some supervisory roles.

In describing the jobs and the main duties performed under each job, it was assumed that all three cadres perform both technical and managerial duties and tasks under each of the seven broad strategic management areas of focus outlined above but reduced in both scale and scope at each specific level of operation. As SLARI moves on to embrace performance contracting, everybody will need to include each and every task they undertake in the course of performing their main duties. In most cases, research scientists see their main duties fitting under research planning and management; generation and promotion of knowledge, information and technologies; and knowledge management and scaling up of technological innovations only. However, it has been shown that research scientists undertake a lot of tasks connected with the other broad strategic management areas of focus (human, financial, physical as well as governance, communication and marketing) in the course of performing their main technical/research duties. These tasks should, therefore, be identified and included in their performance contracts.

Given this understanding and considering the SLARI's move towards performance contracting in line with the government's directives, an attempt was made to outline the main duties performed under each of the broad strategic management areas of focus at the top level research managers, middle level research managers and research scientist's level. The main duties performed under each of the broad strategic management areas of focus at the top level research managers, middle level research managers and research scientist's level were reduced in scale and scope at each level to institutional/centre; centre/programme; and programme/project focus for better alignment and outcome mapping respectively.

The jobs performed by the top level research managers are at the institutional/centre levels. The general job description for the top level research managers is, therefore, to ensure effective and efficient development, implementation and management of research plans so as to deliver the institute and agricultural sector mission and mandate. Likewise, the jobs performed by the middle level research managers and research scientists are mostly at the centre/programme and programme/project levels respectively. Some of the main duties that should be performed by the top level research managers under each of the broad strategic management areas of focus are outlined here below. The main duties performed by the top level research managers under each of the broad strategic management areas of focus were then cascaded down to the middle level research managers and research scientist's level but reduced in scale and scope at each level to centre/programme and programme/project focus for better alignment and outcome mapping as shown in Annex 3.1. The main duties that should be performed by the top level research

managers under each of the broad strategic management areas of focus may include the following:

(a) Research planning and management

- (i) Develop and implement institutional/centre strategic plans aligned to the national and agricultural sector development goals and objectives.
- (ii) Develop and implement operational plans to operationalize institutional/centre strategic plans.
- (iii) Develop and implement rolling annual work plans linked to institutional/centre and staff annual performance.
- (iv) Develop and implement effective and efficient institutional/centre administration and procurement services delivery systems and processes.
- (v) Develop, implement and continuously update institutional/centre research planning and management information systems.

(b) Generation and promotion of knowledge, information and technologies

- (i) Identify and prioritize challenges and constraints facing the agricultural sector and institutional/centre areas of focus.
- (ii) Develop and review institutional/centre research plans required to address identified priority research constraints.
- (iii) Develop and operationalize appropriate institutional/centre research programme implementation and management mechanisms.
- (iv) Develop and operationalize appropriate institutional/centre management, monitoring and evaluation mechanisms.
- (v) Develop, implement and continuously update institutional/centre knowledge, information and technologies generation and promotion information systems.

(c) Knowledge management and scaling up of technological innovations

- (i) Develop and operationalize appropriate institutional/centre mechanisms for up scaling agricultural knowledge, information and technologies.
- (ii) Develop and operationalize beneficial institutional/centre knowledge and information outreach partnerships and strategic alliances.
- (iii) Develop and operationalize effective and efficient institutional/centre knowledge and information management systems.
- (iv) Develop and implement effective and efficient institutional/centre information and communication technology infrastructure and systems.
- (v) Develop, implement and continuously update institutional/centre knowledge management and scaling up of technological innovations information systems.

(d) Human resource planning, development and management

- (i) Determine and document institutional/centre long-term human resource requirements.
- (ii) Develop and implement institutional/centre human resource staffing processes and procedures.
- (iii) Develop and implement institutional/centre apprentice-to-professional staff development procedures.
- (iv) Develop and implement institutional/centre performance based management system.
- (v) Develop and implement institutional/centre staff compensation/motivation schemes, policies and procedures.
- (vi) Develop, implement and continuously update institutional/centre human resource development and management information systems.

- (e) **Financial resource planning, mobilization and management**
 - (i) Formulate and implement institutional/centre long-term financial requirement plan and effective strategies to mobilize and manage financial resources.
 - (ii) Develop and implement policies, systems and procedures for allocating institutional/centre financial resources to optimize their use.
 - (iii) Develop and implement policies, systems and procedure manuals for guiding the utilization of institutional/centre financial resources.
 - (iv) Develop and implement financial accounting systems and procedures for preparing periodical institutional/centre financial reports and internal and external audits.
 - (v) Develop, implement and continuously update institutional/centre financial resource mobilization and management information systems.

- (f) **Physical resources planning, development and management**
 - (i) Prepare and implement institutional long-term institutional/centre physical resources plan and management structure.
 - (ii) Prepare and implement strategies to acquire, develop and manage institutional/centre physical resources.
 - (iii) Prepare and implement policies, systems and procedures for allocating, sharing and maintenance of institutional/centre physical resources to optimize their use.
 - (iv) Prepare and implement institutional/centre physical resources accounting, assessment and disposal systems and procedures.
 - (v) Develop, implement and continuously update institutional/centre physical resource development and management information systems.

- (g) **Corporate governance, communication and marketing**
 - (i) Develop and implement effective and efficient institutional/centre planning and management systems.
 - (ii) Develop and implement effective and efficient institutional/centre monitoring and evaluation systems.
 - (iii) Develop and implement effective and efficient institutional/centre internal financial and asset audit systems.
 - (iv) Develop and operationalize effective institutional/centre corporate communication and marketing products and services.
 - (v) Develop, implement and continuously update institutional/centre corporate communication and marketing information systems.

3.4 Assessment of Performance Gaps

3.4.1 Introduction

Performance gap is the difference between the expected level of performance and the actual performance. Performance gap is the result of gaps in competency and organizational constraints. Gaps in competency can occur at the technical and managerial levels. Knowledge is retained information concerning facts, concepts and relationships. Attitudes consist of feelings or statements for or against certain issues. Attitudes reflect the predisposition of individuals to view their jobs, other people and work in a certain way. Attitudes are reflected in people's behaviour and can be either positive or negative. Positive attitude can be shown by being alert, responsive and energetic while negative attitude is exhibited through arrogance, rudeness, hot temper, cynical behaviour and not being a team player. Skills are abilities to do things or effectively apply knowledge and personal attitudes in work situations.

3.4.2 Findings

Following the identification of research cadres, job descriptions and main duties performed under each cadre, the performance gaps in technical and managerial knowledge and skills experienced at different levels of management were identified. The research scientists were found to be very clear on their technical performance gaps related to higher academic degrees than their managerial knowledge and skills gaps. However, a number of the research scientists have had some on-the-job experience on management and leadership.

The research scientist's technical and managerial knowledge and skills were assessed along the broad strategic management areas of focus that form the basis for their job description and duties allocation. Analysis of the data and information collected revealed the following existing gaps in technical and managerial knowledge and skills:

(i) **Research planning and management:** Strategic and annual work planning at different levels; sectors and subsectors review and analysis; research programme formulation; priority setting; research programmes and projects management; policy and policy analysis; and outcomes and impact assessment among others.

(ii) **Generation and promotion of knowledge, information and technologies:** Challenges and constraints analysis and ranking; integrated agricultural research for development; agricultural product value chain analysis, mapping and upgrading; establishment and management of innovation platforms; competitive grants project proposal writing; gender analysis and mainstreaming; scientific writing, presentation and publishing; research methodologies and experimental designs; and statistical packages, data collection and analysis among others.

(iii) **Knowledge management and scaling up of technological innovations:** Outreach and scaling up of technological innovations; formation and management of partnerships and strategic alliances; information and communication technology; and knowledge and information management systems among others.

(iv) **Human resource planning, development and management:** Staff planning and deployment; staff recruitment and training; performance appraisal and improvement; team building and management; staff motivation, mentoring and nurturing; and human resource information systems among others.

(v) **Financial resource planning, mobilization and management:** Financial management cycle; financial reports and the language of finance; budgeting and budgetary control; business plans and resource mobilization; fraud/embezzlement detection and prevention; and financial resource information systems among others.

(vi) **Physical resources planning, development and management:** Physical resources planning and management; development and management of physical resources; allocating, sharing and maintenance of physical resources; physical resources accounting, assessment and disposal; and physical resource information systems among others.

(vii) **Leadership, corporate governance, communication and marketing:** Principles and styles of leadership; management of change; facilitation of meetings and workshops; crisis management and conflict resolution; total quality management; delegation and supervision; stress and time management; financial and assets auditing; planning, monitoring and evaluation;

organizational communication and marketing; problem solving and decision making among others.

4.0 CAPACITY ASSESSMENT AT THE SLARI ORGANIZATIONAL LEVEL

4.1 Introduction

The organizational level of any institution is expected to make informed interpretation and application of the rules of the game spelt out at the enabling environment level and ensures that its players (the staff) are well aware of the rules of the game and play by them in carrying out their research obligations/functions. Traditionally, capacity development and organizational strengthening focused almost entirely on human resources, processes and organizational structuring. However, it has now been realized that this is a very narrow focus and additional dimensions need to be assessed including mission and strategy, culture, structure and competencies, processes (both internal and external), human resources, financial resources, information resources, and infrastructure. It is also important to include assessment of interactions with other organizations and stakeholders within the wider enabling environment. In an increasingly complex world, it is important to form partnerships and to network with other organizations for synergy and complementarities in delivering services.

In order to make an assessment of the organizational level capacity of SLARI, the following eight capacity development strategic areas of focus that are most commonly encountered in performance-focussed agricultural research organizations were analyzed (i) Research programming and management; (ii) Human resource development and management; (iii) Financial resource mobilization and management; (iv) Physical infrastructure development and management; (v) Organizational Leadership and management; (vi) Corporate governance and process management; (vii) Organizational governing and operating/management structure; and (viii) Organizational performance assessment and management.

These capacity development strategic areas of focus have been shown to be the main domains where capacity change happens most frequently and, therefore, can drive the formulation of a capacity development response in SLARI. The eight strategic areas of focus are not necessarily distinct as they spill over and reinforce one another. An attempt was made to assess what functional capacities are available or needed for optimal effectiveness and efficiency within the eight capacity development strategic areas of focus at the SLARI organizational level.

Data and information was collected on the responses on the level of agreement or disagreement on a symmetric agree-disagree scale for a series of judiciary selected guiding statements designed to assess SLARI's capacity to carry out APVC research within the framework of IAR4D. Analysis of the collected data and information revealed varying degree of organizational capacity strengths and weaknesses in each of the eight capacity development strategic areas of focus. On the basis of this analysis, the status of each capacity development strategic area of focus in SLARI was rated on a scale ranging from (i) Need radical improvement; (ii) Need much improvement; (iii) Need some improvement; and (iv) Need no improvement. Given the status rating, the main areas that needed improvement under each of the capacity development strategic area of focus were identified.

4.2 Research Programming and Management

Research programming is the process by which policy, priorities and thrusts in research are translated into programmes of research of short-, medium- and long-term duration. Research programming, therefore, moves the concept of what research could do from the levels of general (concepts, directions and emphasis) to specific (problems, experiments and studies) that are

appropriate in addressing constraints to agricultural research for development. Although programming is supposed to be specific and mainly a bottom-up approach, it takes account of, and involves the continuum in both directions from the national policy level to institutional level and from institutional level to the national policy level. Research programming is, therefore, such a critical element in the implementation of national research policy and programmes that unless it is properly and competently undertaken, an apparently well-organized system may be less productive and ineffective in provision of research services to clients of the research system.

4.2.1 Findings

The analysis of data and information collected indicated that most research scientists are not very familiar with the research programming process. This finding was to be expected because research programming is still a challenge even to the more advanced NARIs including the Consultative Group on International Agricultural Research (CGIAR) centres. This is because research programming is a complex task which requires the consideration of a variety of factors. In planning research programmes, the research managers must be aware of the research priorities; the likelihood of the research programmes fulfilling the national research objectives; technical opportunities of research; perceived needs of research clients; technical and resource constraints that may crop up during the execution of research; and a host of many other factors.

SLARI has recognized the limitations of organizing research according to disciplines that tend to result into programmes that are too academic. Given this recognition, the institute has adopted a programme approach to its research planning and management. In view of this, research operations in SLARI have been rationalized into seven long-term strategic research programme areas of focus as shown in Table 4.1. The research programme areas of focus express a stronger organizational commitment to impact as the strategic orientation and positioning of SLARI as a leader in the generation and promotion of innovative agricultural technologies and stakeholders' empowerment aimed at increasing productivity, commercialization and competitiveness of the agricultural sector.

Table 4.1: SLARI research programme areas of focus and their respective coordinating and implementing research centres

Research Programme Area of Focus	Coordinating and Implementing Research Centre
1.0 Root, Tuber and Grain Legume crops Programme	Njala Agricultural Research Centre
2.0 Cereal Crops Programme	Rokupr Agricultural Research Centre
3.0 Horticultural Crops Programme	Kabala Horticultural Crops Research Centre
4.0 Livestock Programme	Teko Livestock Research Centre
5.0 Fisheries Programme	Freetown Fisheries Research Centre
6.0 Forestry and Tree Crops Programme	Kenema Forestry and Tree Crops Research Centre
7.0 Land, Water and Environment Programme	Magbosi Land and Water Research Centre

On the basis of the analysis of the data and information collected, the status of research programming and management capacity in SLARI was rated as needing radical improvement. Given this status rating, therefore, the focus for research programming and management initiative in SLARI should be to strengthen the institutional capacity to plan, develop and manage demand-driven national research programmes designed to address identified agricultural sector

development challenges. In order to achieve this, the following main areas of research programming and management that need improvement were identified:

- (i) Strategic planning at institutional, centre and programme levels of management.
- (ii) Research programme development and management.
- (iii) Priority setting in agricultural research for development.
- (iv) Integrated agricultural research for development and innovation platforms.
- (v) Mapping, analysis, upgrading and promotion of agricultural product value chains.
- (vi) Competitive grant project proposal writing.
- (vii) Gender analysis and mainstreaming in agricultural research.
- (viii) Management, monitoring and evaluation of research programmes and projects.
- (ix) Scientific writing, presentation and publishing.
- (x) Research project proposal formulation, approval and implementation processes and procedures.
- (xi) Preparation and approval of annual work plans and budgets.
- (xii) Technology and innovation packaging and transfer.
- (xiii) Policy, socioeconomic and markets analysis.
- (xiv) Research impact assessment.
- (xv) Intellectual property rights and institutional research policy.
- (xvi) Research methodologies and experimental designs.
- (xvii) Statistical packages, data analysis and report writing.
- (xviii) Information technology and communication.
- (xix) Management and up scaling of agricultural Knowledge and information.
- (xx) Research programming and management information systems.

4.3 Human Resource Development and Management

The capacity of an organization is embedded in the ability of its human resources to work together within established rules and values and to interact with a wide range of organizations involved in agricultural research for development that share common objectives. Agricultural researchers have unique occupational needs and characteristics which have important implications for management. They have high expectations for job fulfilment and need considerable autonomy in deciding on and carrying out their research activities. Because of this, policies and practices for managing human resources of agricultural research institutions differ in many aspects from those for many other types of public and private sector institutions.

In view of this, it is very important for agricultural research managers to ensure that their organizations attracts, develops, retains and effectively utilizes human resources with specific knowledge, skills, attitudes and motivations which can allow the organizational objectives to be attained effectively and efficiently. Effective human resource management should, therefore, be seen as an interactive process that begins with the inputs of organizational research objectives, available organizational operating resources, and critical analysis of the current state of the human resources.

4.3.1 Findings

The current status of human resources at the SLARI headquarters and centres as well as the optimal human resource requirements is shown in Table 4.2. The current status of research scientists in all the SLARI centres is very low except for Njala Agricultural Research Centre and Rokupr Agricultural Research Centre centres that have some core research scientists. Even these two centres that are currently considered to be functional are operating below half of the required

staff complement. The optimal number of research scientists was estimated based on the requirements for implementing the research programmes outlined in the SLARI Strategic Plan and Operational Plan. The required technical support and administrative support staff for each centre was calculated using the widely accepted ratio of 1:2:4 research scientists to technical support staff to administrative support staff respectively. The sum total of the optimal number of research scientists, technical support staff and administrative support staff was used to give an indication of the total staff complement for each centre and headquarters when fully established.

The most important tasks in human resource management in agricultural research can be grouped into planning, staffing, development, compensation and evaluation. Given the current status of human resources in SLARI, the aspect of human resource planning should involve analysis and determination of the types, amounts and availability of personnel required by the Institute's research centres including the headquarters. In doing this, the human resource planning and utilization in SLARI should be seen as an integral part of overall programme planning process whose primary reference points are the organizational goals and objectives and the research programme plans and priorities. Given this understanding, therefore, the SLARI research managers must be able to relate information about the current and future staff to current and future research programmes as well as the current and future capacity of the Institute to effectively absorb, utilize and manage projected levels of staff. Human resource planning process should, therefore, include a detailed analysis of human resources requirement, assessment of the availability of human resources and matching of requirements to availability. However, human resource planning and staffing in SLARI may be constrained by the:

- Rigid civil service regulations which reduce options for personnel deployment and rewards.
- Low level of research programme planning.
- Limited control over personnel recruitment.
- Excessive programme and personnel fragmentation due to heavy reliance on donor-driven projects.
- Limited human resource planning expertise.
- Inadequate human resource information system.
- Heavy reliance on donor funding for staff development.

The SLARI's attraction, retention, motivation and performance of well-trained agricultural research staff will depend critically on its compensation policies and procedures. Compensation schemes relate to the structure of grades and positions, promotion policies and salary/non-salary rewards. Compensation may, however, be the most difficult human resource management task for SLARI because:

- The SLARI management may not be in a position to make effective changes in policies and procedures for compensation of research staff.
- Researchers may be subjected to the same terms and conditions of employment that apply to all other civil servants.
- The country civil service system may have promotion policies that favour seniority over merit.
- There may be a relatively small income differential between starting salaries and highest attainable salary.
- There may be few major promotion opportunities during the career of a researcher.
- Existing promotions may not be associated with significant increases in income.

On the basis of the analysis of the data and information collected, the status of human resource development and management capacity in SLARI was rated as needing radical improvement.

Given this status rating, therefore, the focus for human resource development and management initiative in SLARI should be to strengthen the institutional capacity to develop, institutionalize and sustain functional and effective human resource development policies and plans on planning, staffing, training and career development that are geared towards improvement of the individual person, the group and the overall organizational effectiveness. In order to achieve this, the following main areas of human resource development and management that need improvement were identified:

- (i) Human resource long-term planning and deployment.
- (ii) Human resource recruitment and training.
- (iii) Performance appraisal and improvement.
- (iv) Staff compensation and motivation schemes and policies.
- (v) Team building and management.
- (vi) Staff mentoring and nurturing.
- (vii) Human resource development and management information systems.

Table 4.2 Total centre research scientists and projected technical and administrative support staff requirement

SLARI research centres and headquarters	Total SLARI and centre staff requirement by cadres				Total by centre
	Current number of scientists	Optimal number of scientists	Technical support staff	Administrative support staff	
1.0 Njala Agricultural Research Centre	22	54	108	216	400
2.0 Rokupr Agricultural Research Centre	19	49	98	196	362
3.0 Kabala Horticultural Crops Research Centre	1	32	64	128	225
4.0 Teko Livestock Research Centre	4	8	16	32	60
5.0 Freetown Fisheries Research Centre	2	17	34	68	121
6.0 Kenema Forestry and Tree Crops Research Centre	6	42	84	168	300
7.0 Magbosi Land and Water Research Centre	5	19	38	76	138
8.0 SLARI Headquarters	4	10	25	15	54
Total SLARI staff complement	63	231	467	899	1,660

4.4 Financial Resource Mobilization and Management

Financial resource management has become a subject of increased concern because of budgetary constraints; increased competition for financing; challenges of increased efficiency in the public sector; the need for increased performance of public-sector organizations; taxpayers' demand for

transparency and accountability; need for better governance systems; and evolution from a control system of inputs to control system of products and results. Financial resource management in an agricultural research institute can be seen as a set of activities aimed at putting financial resources to the service of achieving the objectives of agricultural research.

Financial management includes financial planning, financial accountability, and financial statements and systems. Management of an organization's financial resources is a priority capacity requirement. Good management of budgeting, financial record keeping and reporting is essential to the overall functioning of an organization because it ensures that the managers have the information they need to make timely decisions and allocate financial resources. It also inspires confidence in development partners interested in financing research activities. Along with human resources, financial management provides the major inputs upon which a research institution can build its products and services.

4.4.1 Findings

Agricultural research in SLARI has largely been public funded. The Government of Sierra Leone, assisted by development partners, has continued to fund agricultural research from the recognition that agricultural research is fundamentally a public good. On average, the rate of return to investment in agricultural research is supposed to be relatively high, on the long run, compared to alternative investment opportunities. In addition to this, investment in agricultural science and technology has contributed substantively to past growth performance and is expected to contribute significantly to the achievement of future national development priorities. However, there has been heavy dependence on often erratic foreign aid to fund agricultural research in Sierra Leone.

Currently, the Government has attracted considerable funding from multilateral and bilateral development partners for research. These funds have been accessed through proposals and negotiations with development partners. However, in order to attract more funding from development partners and other grant making foundations and corporations, SLARI will need to build/strengthen the capacity of its research scientists in competitive grant project proposal writing, improve on negotiation skills for funding, establish beneficial donor relations and build donor confidence in its financial management and project implementation.

Private sector funding of agricultural research is currently minimal in Sierra Leone compared to most other developing countries. This arises from the fact that returns to investment in research is slow and long-term, while private sector institutions favour more rapid returns from investments. A more pressing constraint to private sector funding of agricultural research emanates from lack of clear legislation and mechanisms for cost and benefit sharing. This anomaly equally constrains the development of public-private sector partnership initiatives and contract agricultural research.

Despite all these factors, promotion of research and technology development is one of the critical areas the Government of Sierra Leone has recognized in the Vision 2025 and in the National Sustainable Agriculture Development Plan. The Government also recognizes the low funding levels that has been directed to research and has, therefore, taken a long-term view to seek ways and means to diversify the funding base and enhance the financial sustainability of agricultural research. Table 4.3 shows the estimated financial resource requirements for SLARI centres and headquarters for the period 2012-2016.

Financial planning is the organization's ability to forecast its future monetary needs and requirements. To ensure there is enough money available, SLARI must be able to predict its anticipated operating expenses, determine the amount of funds required for capital expenditures and predict when and how much cash is required over a period of time. The ability to plan revenues and cash requirements provides a framework within which SLARI management can make decisions about present and future programmes and capital needs. The SLARI's financial planning should include both its short- and long-term financial requirements along with its need for cash. However, forecasting cash requirements is a challenging endeavour for both private and public organizations.

Taking care of, and accounting for the finances allocated to SLARI are prerequisites for external trust. This should normally occur within a highly structured, rule-based system that is transparent and verified through various monitoring procedures. Financial monitoring involves the development and creation of timely reports so that managers can make timely financial decisions. The structure of rules and transparency should be operationalized by standard documents that need to be filled out and approved at various levels of the Institute. It is by following these rules and approval procedures that accountability in financial resources management in SLARI can be developed.

On the basis of the analysis of the data and information collected, the status of financial resource mobilization and management capacity in SLARI was rated as needing radical improvement. Given this status rating, therefore, the focus for financial resource mobilization and management initiative in SLARI should, therefore, be to strengthen the institutional capacity to prepare medium- and long-term financial plans and establish organizational structure to manage the plans; develop strategies to mobilize and manage financial resources; allocate the funds obtained on a short-term basis to optimize their use; use the financial resources efficiently; exercise control over the funds received; and account for the received financial resources. In order to achieve this, the following main areas of financial resource mobilization and management that need improvement were identified:

- (i) Long-term financial resource requirement planning.
- (ii) Financial management cycle in a research institution.
- (iii) Financial reports and the language of finance.
- (iv) Budgeting and budgetary control.
- (v) Financial policies, accounting systems and procedure manuals.
- (vi) Promoting programmes to funding agencies.
- (vii) Fraud/embezzlement detection and prevention.
- (viii) Business plans and financial resource mobilization.
- (ix) Donor relations and confidence building.
- (x) Monitoring and evaluation in financial management.
- (xi) Financial resource development and management information systems.

4.5 Physical Infrastructure Development and Management

Research institutions require properly planned, developed and managed physical infrastructure for effective provision of research for development services. Poor physical facilities and hence poor work environment can be a major constraint to carrying out effective research. Effective research institutions need adequate physical facilities such as land, laboratories, office space, residential houses and equipment to carry out agricultural research for development. Once set up, these facilities need to be regularly repaired, renovated and maintained. In order to achieve this and contribute to improvement of the overall institutional efficiency and effectiveness,

research institutions need to focus on the analysis and prioritization of physical resources development and management functions as well as development and institutionalization of functional and effective physical resources development and management system.

4.5.1 Findings

SLARI was established by an Act of Parliament as the Sierra Leone's facility for carrying out agricultural research and agricultural technology generation for the benefit of the farming, fishing and forestry sectors and to provide for other related matters. When fully operational, SLARI shall be composed of seven research centres spread throughout the country. These centres have been categorized into the following three categories depending on the availability of staff, infrastructure, research programmes and funding:

- (i) **Category 1 Centres:** These are the centres that currently exist and have some core buildings, equipment, staff, ongoing research programmes and funding. The centres under this category include Njala Agricultural Research Centre and Rokupr Agricultural Research Centre.
- (ii) **Category 2 Centres:** These are the centres that have a site on which there are damaged buildings with little or no equipment, few staff, extremely small or non-existent research programme and very little or no direct funding. The centres under this category include Teko Livestock Research Centre; Freetown Fisheries Research Centre; Kenema Forestry and Tree Crops Research Centre; and Magbosi Land and Water Research Centre.
- (iii) **Category 3 Centres:** These are the centres that have yet to be established physically with a permanent site, buildings, staff and other resources and which have no funding available to them. Only one Centre, Kabala Horticultural Crops Research Centre, is under this category.

Sierra Leone has had a long history of agricultural research with excellent research infrastructure spanning almost 100 years. However, the devastation of physical infrastructure and equipment during the country's civil war and the departure of well-trained scientists during this period brought agricultural research to a halt. Since 2001, there has been goodwill from the Government and development partners to resuscitate the research establishment but will require heavy investment in the reconstruction of the facilities.

The seven research centres that constitute SLARI are at different stages of development and, therefore, the main challenge for SLARI is to fast-track the development of the centres by equipping them with adequate staff and funding; land resources; well-developed office and residential houses; and laboratory equipment and facilities to enable them carry out research programmes and projects in their respective mandate areas. The expected overall outcome of this effort is a well-developed national research capacity and competence that can facilitate effective generation of technologies, knowledge and information for agricultural product value chains.

Table 4.4 shows the estimated financial resource requirements for developing and managing physical infrastructure and equipment capacity for SLARI centres and headquarters summarized from the SLARI Investment Plan (SLARI, 2011c). Currently, only two of the seven research centres have the basic physical infrastructure and equipment to carry out research. Efforts should, therefore, be made to complete the rehabilitation of the destroyed facilities, construction of additional facilities and provision of the necessary equipment and related facilities at these two category one centres to enable them be fully operational.

The research programme areas of focus to be carried out at the other five centres under categories

two and three is equally important in contributing to the national economic growth and agricultural sector development as well as improvement of livelihoods, income generation and food security. Because of this, efforts should be made to establish these category two and three centres and equip them with the necessary physical infrastructure and equipment to enable them become fully operational. The development and provision of infrastructure and facilities at each centre should be guided by the research priorities identified in the Strategic Plan and operational plan under the research programme areas of focus coordinated and implemented by each centre.

On the basis of the analysis of the data and information collected, the status of physical infrastructure development and management capacity in SLARI was rated as needing radical improvement. Given this status rating, therefore, the focus for physical infrastructure development and management initiative in SLARI should be on analysis and prioritization of the institutional physical infrastructure and equipment requirement and development and institutionalization of functional and effective physical infrastructure development and management systems and processes. In order to achieve this, the following main areas of physical infrastructure development and management that need improvement were identified:

- (i) Physical infrastructure and equipment long-term planning.
- (ii) Physical infrastructure development and maintenance.
- (iii) Physical infrastructure and equipment acquisition, allocation and sharing.
- (iv) Equipment repair, servicing and maintenance.
- (v) Management of procurement and supplies.
- (vi) Physical infrastructure and equipment accounting, assessment and disposal.
- (vii) Information technology infrastructure and information communication systems.
- (viii) Physical infrastructure and equipment development and management information systems.

Table 4.3: Estimated financial resource requirements for the SLARI centres and headquarters for the period 2012-2016

SLARI research centres and headquarters	Estimated financial resources requirements (USD '000')					
	Research programmes	Human resource	Physical infrastructure	Equipment and related facilities	Research support functions	Total by Centre
1.0 Njala Agricultural Research Centre	24,113.8	16,862.9	3,030.5	8,652.6	526.6	53,186.4
2.0 Rokupr Agricultural Research Centre	20,430.1	13,107.0	4,140.0	4,609.0	422.9	4,2709.0
3.0 Kabala Horticultural Crops Research Centre	9,865.3	16,529.1	3,750.0	6,141.5	362.9	36,648.8
4.0 Teko Livestock Research Centre	2,805.7	7,184.5	2,535.0	12,954.0	254.8	25,734.0
5.0 Freetown Fisheries Research Centre	18,459.7	8,106.5	3,005.0	5,180.0	347.5	35,098.7
6.0 Kenema Forestry and Tree Crops Research Centre	5,495.0	7,751.9	21,760.0	7,763.3	427.7	43,197.9
7.0 Magbosi Land and Water Research Centre	5,798.5	8,397.0	2,252.0	1,243.9	177.0	17,868.4
8.0 SLARI Headquarters	0	3,758.6	14,600.0	993.6	286.6	19,638.8
Total by category	86,968.1	81,697.5	55,072.5	47,537.9	2,806.0	274,082.0

Table 4.4: Estimated financial resource requirements for development and management of physical infrastructure and equipment capacity for SLARI centres and headquarters

SLARI research centres and headquarters	Estimated financial resource requirements, USD '000'					
	Physical infrastructure	Laboratory equipment and related facilities	Office equipment and related facilities	Transportation equipment and related facilities	Field equipment and related facilities	Total by Centre and headquarters
1.0 Njala Agricultural Research Centre	3,030.5	1,103.5	201.0	993.6	6,354.5	11,683.1
2.0 Rokupr Agricultural Research Centre	4,140.0	3,564.0	360.0	576.0	109.0	8,749.0
3.0 Kabala Horticultural Crops Research Centre	3,750.0	2,050.0	631.5	1,260.0	2,200.0	9,891.5
4.0 Teko Livestock Research Centre	2,535.0	1,290.0	342.5	554.0	1,407.0	6,128.5
5.0 Freetown Fisheries Research Centre	3,005.0	3,500.0	360.0	720.0	55.0	7,640.0
6.0 Kenema Forestry and Tree Crops Research Centre	21,760.0	3,030.3	303.0	1,759.0	2,671.0	29,523.3
7.0 Magbosi Land and Water Research Centre	2,252.0	219.9	209.8	235.3	578.9	3,495.5
8.0 SLARI Headquarters	14,600.0	0	427.6	566.0	0	15,593.6
Total by category	55,072.5	14,757.7	2,835.4	6,663.9	13,375.4	92,704.5

4.6 Organizational Leadership and Management

Organizational leadership and management is the ability to influence, inspire and motivate people and organizations to achieve and go beyond their goals. An important characteristic of good leadership is the ability to anticipate (and sometimes catalyze) and be responsive to, and manage change to foster human development. Leadership is not synonymous with a position of authority. Leadership can also be informal and manifest itself in many ways and at different levels. Although leadership is most commonly associated with an individual leader, it can equally reside within a government/organization unit that takes the lead in implementing reform. A key determinant of leadership is whether it is able to rally others around a common goal.

Because managers get results through people, they must design the best methods and means of making their staff achieve their best. However, in most research institutes in the developing countries, research managers are not trained in organizational leadership and management. Many of them are appointed to leadership positions on the basis of their scientific contribution and not on their managerial experience and capability. Once appointed into leadership positions they are expected to somehow turn themselves into good managers to deal with issues related to research management as well as human, financial and physical resources management. These are areas that they may not have been trained in and in most cases the system may not have prepared them for this. Instead, they are left to learn on the job and in most cases this has led to disaster in many research organizations in developing countries.

4.6.1 Findings

As a public research institution, SLARI is expected to conduct agricultural research of strategic national importance and produce national public goods in the form of technologies, information and knowledge. It is also expected to contribute to regional and global public goods together with its partners. The management for APVC research within the framework of IAR4D requires a balance between flexibility to encourage creativity and direction to ensure that both the Institute and programme mandates are effectively and efficiently delivered. In addition to the normal human resource development and management tasks of planning, staffing, development, compensation and evaluation, the SLARI research managers shall need to understand researcher motivation as well as management of interpersonal and group behaviour through effective leadership, team building, improved communication, and conflict and crisis management. In view of this and considering the need to be effective and efficient, SLARI shall need to develop and adopt a style of organizational leadership and management which allows a diverse group of highly trained and potentially creative individuals to work individually and collectively to achieve the institutional and programme goals and objectives.

On the basis of the analysis of the data and information collected, the status of organizational leadership and management capacity in SLARI was rated as needing much improvement. Given this status rating, therefore, the focus for organizational leadership and management initiative in SLARI should be on establishment and operationalization of an effective and efficient organizational leadership and management system at its headquarters and replicate it at the centre level. The primary task of this organizational leadership and management system should be to create the appropriate policy, technical and social environment within the Institute to facilitate effective and efficient performance of research and support personnel. To be effective in doing this, SLARI research managers at the headquarters and centres should be expected to understand the factors which motivate their research and support personnel to improve their performance so as to be in a better position to influence and improve the overall productivity of the Institute and

centres. In order to achieve this, the following main areas of organizational leadership and management that need improvement were identified:

- (i) Managing change in agricultural research systems.
- (ii) Facilitation and management of meetings and workshops.
- (iii) Crisis management and conflict resolution.
- (iv) Participatory and inclusive leadership and management style.
- (v) Transparent and accountable leadership and management.
- (vi) Information sharing and communication in management.
- (vii) Total quality management.
- (viii) Self assessment and management for improved leadership and management.
- (ix) The practice of delegation and supervision.
- (x) Effective stress and time management.
- (xi) Organizational leadership and management information systems.

4.7 Corporate Governance and Process Management

A corporation is a congregation of various stakeholders such as customers, employees, investors, collaborators, partners, government and society in a given company or organization. A corporation is expected to be fair, transparent and accountable to its stakeholders in all its undertakings. This has become imperative in today's globalized business world where corporations need to access global pools of capital; need to attract and retain the best human capital; need to form beneficial partnerships and strategic alliances; and need to live in harmony with the community. Unless a corporation embraces and demonstrates ethical conduct, it may find it difficult to succeed in the current highly competitive world.

The success of any organization in today's globalized business world depends primarily on its ability to mobilize and utilize all kinds of resources to meet the objectives set out in its planning process. Deterioration in quality and transparency in many organizations have called for adoption of corporate governance that defines the processes and related structures by which organizations are directed, managed and held to account. Corporate governance influences how the objectives of an organization are set and achieved; how risks are monitored and assessed; and how performance is optimized. It is a system of structuring, operating and controlling an organization with a view to achieving long-term strategic goals.

Process management is the task of aligning and integrating the various practices and cultures of different segments of an organization through the introduction of common systems and operations that apply uniformly to all segments of the organization. Process management takes place at every level of an organization, from the board of directors to the line worker. The board and senior managers must know how to problem-solve, plan and make timely decisions. If they are deficient in these areas, organizational direction is often hampered. At the more operational level, programme units, departments and other functional segments of the organization must plan and set short- and medium-term goals as well as solve problems, make decisions, and generate strategies to carry out appropriate activities to achieve results.

4.7.1 Findings

The current SLARI organizational and management structure is weak in the area of corporate governance and will, therefore, need to be strengthened in line with the modern corporate culture. In order to continually improve on its efficiency and effectiveness while building on its credibility, SLARI Directorate and Council should strive to embrace the concept of good

corporate governance to assist the management to pursue objectives that are in the interest of the Institute as well as to facilitate effective monitoring and efficient utilization of resources entrusted to it.

The process management in SLARI should be designed to include clear and effective operations and procedures for problem-solving, planning, decision-making, communication, and monitoring and evaluation. Internal communication should be seen as the glue holding the Institute together. If not managed well, internal communication can break the Institute apart because both information and misinformation constantly flow in organizations. Accurate information provided through a system of top-down flows and feedback is vital to keep employees aware about what needs to be done and to keep managers informed about what was achieved. This would require the development and operationalization of appropriate process management monitoring and evaluation system that is linked to the overall institutional programme monitoring and evaluation.

On the basis of the analysis of the data and information collected, the status of corporate governance and process management capacity in SLARI was rated as needing much improvement. Given this status rating, therefore, the focus for corporate governance and process management initiative in SLARI should be on establishment and operationalization of effective and independent corporate governance mechanisms in compliance with modern corporate culture and related organizational structures. The corporate governance mechanisms should be designed to contribute effectively towards the Institute's accountability; effectiveness and efficiency; integrity and transparency; and open leadership and process management. In order to achieve this, the following main areas of corporate governance and process management that need improvement were identified:

- (i) Financial and assets audit.
- (ii) Organizational planning, monitoring and evaluation.
- (iii) Delegation of authority and accountability.
- (iv) Corporate communication, marketing and legal aspects.
- (v) Partnerships and strategic alliances.
- (vi) Problem solving and the decision making process

4.8 Organizational Governing and Operating Structure

Organizational structure is defined as the ability of an organization to divide labour and assign roles and responsibilities to individuals and groups in the organization, as well as the process by which the organization attempts to coordinate its labour and groups. The ability and capacity of an organization to structure and restructure itself to adapt to changing internal and external conditions is important for maximizing organizational performance. Unlike other capacities, the structuring and restructuring of an organization does not formally occur regularly. However, adaptations of structure are always occurring in organizations. Organizational structure is normally concerned with governing structure and operating/management structure as two separate but connected aspects.

The governing structure that represents the ownership or legal guidance system of the organization relates to the ultimate legal and social responsibility of the organization. The term governance is used to refer to the issues and problems involved in aligning the interests of those who manage an organization with the interests of those who are responsible for organizational results, the organization's owners, and "outsiders" who have a stake in the organization. In government organizations, the people of the country are the ultimate stakeholders of the governing structure. Governance is exercised through government and through ministers

responsible for specific entities. At the government level, ministers and their team manage the bureaucracy and try to link public policy and bureaucratic action.

In public sector organizations, especially state enterprises, where the idea of ownership is not as clearly defined as in the private sector, the problem of governance is becoming increasingly important. Public sector managers are frequently subjected to less rigid controls and are likely to have greater incentives to satisfy their own interests at the expense of organizational goals. Add to this the ineffective and lax institutional framework and enforcement mechanisms that characterize many institutions in developing countries, and you have the perfect recipe for mass public sector mismanagement.

The operating structure, on the other hand, relates to how an organization transforms resources into goods and services for targeted purposes. It represents the system of working relationships arrived at to divide and coordinate the tasks of people and groups working toward a common purpose. Most people visualize an organization's structure in terms of the familiar organizational chart. However, structure is far more than just that. It involves the division of labour, including roles, responsibility and authority as well as the coordination of labour into units and inter- and intra-unit groupings.

4.8.1 Findings

The SLARI Act contains statements of the composition and key functions, roles and responsibilities for the various management elements and structures within the organization. As a state corporation, the governance of SLARI is vested in the SLARI Council which is the highest administrative and policy making body under the Act with the powers to control and supervise the operations of the Institute. The Council has four committees that include (i) Scientific and Technical Committee; (ii) Appointments, Promotion and Disciplinary Committee; (iii) Administration and Finance Committee; and (iv) Documentation, Data Management and Information Committee.

Within this context of a governing structure, the SLARI Act provides the legal and policy framework and direction that guides the functioning of the Institute. In a wider sense, SLARI governing structure should be seen as the point at which the external and internal environments meet. The governing structure should, therefore, be able to address the problems of linking or harmonizing the conflicting interests of all stakeholders (both internal and external, including the general public) with the Institute's goals and Mission. In this regard, the SLARI Council should have its finger on the pulse of both environments. The Council should, in particular, be able to assess whether institutional goals are supportable and meet national development goals; whether the Institute is responding appropriately to major trends in the field and within the broader environment; and whether it meets the needs of the agricultural sector stakeholders.

The main concern in assessing the SLARI organizational structure is whether or not it supports or inhibits the capacity of the Institute to perform its work. Here, the point of interest is the extent to which individuals, departments or other groupings in SLARI understand their roles in the Institute; whether they have the authority to carry out their roles; and whether they are accountable for their work. In addition to this, the ideal SLARI structure should include appropriate coordination process of linking specialized activities of individuals or groups so that they can work toward common ends.

The SLARI research portfolio made of research programme areas of focus are supposed to be implemented at the seven research centres that constitute the Institute. Each of the centres has been assigned specific research programme area of focus to coordinate and implement in close consultation with the Institute's Directorate. In view of this, the SLARI Directorate organizational governance and operating structure should be cascaded down to the centre level but reduced in scale and scope to the specific size and needs of each centre.

On the basis of the analysis of the data and information collected, the status of organizational governing and operating structure capacity in SLARI was rated as needing much improvement. Given this status rating, therefore, the focus for organizational governing and operating structure initiative in SLARI should be on development and operationalization of effective organizational structure designed as an effective framework of functional relationships between the various organs of the Institute, showing the hierarchical arrangements of the decision-making tree, and how activities of the Institute are organized, controlled, integrated and coordinated including clear lines of authority, responsibility, accountability and communication. Currently, centres have produced different governing and operating/management structures. Given this state of affairs and considering the need to ensure uniformity, SLARI management should prepare one generic centre governing and operating/management structure for adoption by all the centres. In order to achieve this, the following main areas of organizational governing and operating structure that need improvement were identified:

- (i) The SLARI Act of Parliament.
- (ii) Organizational governing and operating structures.
- (iii) Cascading organizational governing and operating structures.
- (iv) Institutional linkages, collaborations and networking.

4.9 Organizational Performance Assessment and Management

Performance management can be defined as a systematic process for improving organizational performance by developing the performance of individuals and teams. It is a means of getting better results from the organization, teams and individuals by understanding and managing performance within an agreed framework of planned goals, standards and competence requirements. The overall aim of performance management is to establish a high performance culture in which individuals and teams take responsibility for continuous improvement of business processes and for their own skills and contributions within a framework provided by effective leadership.

Performance management is a planned process whose primary elements are agreement, measurement, feedback, positive reinforcement and dialogue. It is concerned with measuring outputs in the form of delivered performance compared with expectations expressed as objectives. In this respect, performance management focuses on targets, standards and performance measures or indicators. It is based on the agreement of role requirements, objectives and performance improvement and personal development plans. Performance management provides the setting for ongoing dialogue about performance which involves joint and continuing review of achievements against objectives, requirements and plans.

Performance management is also concerned with inputs and values. The inputs are knowledge, skills and behaviours required to produce the required results. Developmental needs are identified by defining these requirements and assessing the extent to which the expected levels of performance have been achieved through the effective use of knowledge, skills and through appropriate behaviour that upholds core values. Performance management is a continuous and

flexible process that involves managers and those whom they manage as partners within a framework that sets out how they can best work together to achieve the required results. It is based on the principle of management by contract and agreement rather than management by command. It relies on consensus and cooperation rather than control or coercion.

4.9.1 Findings

Currently, SLARI does not have a well-established performance assessment and management system. Quantitative measures of performance for agricultural researchers are difficult to establish and maintain. The most commonly used measure of performance of researchers is publications in refereed professional journals. This is, however, not entirely appropriate for those involved in research management and adaptive research activities. Excessive reliance on scientific publication may effectively redirect research output away from meeting critical needs for farmers. Performance appraisal has been discredited in many research organizations because it has been operated as a top-down and largely bureaucratic system owned by the human resource department rather than the line managers. Most of these performance appraisals are often backward looking, concentrating on what had gone wrong, rather than looking forward to future development needs.

On the basis of the analysis of the data and information collected, the status of organizational performance assessment and management capacity in SLARI was rated as needing radical improvement. Given this status rating, therefore, the focus for organizational performance assessment and management initiative in SLARI should be on establishment and operationalization of effective performance assessment and management mechanisms in compliance with the government performance contracting requirement. This mechanism should be aimed at creating a shared understanding of what is required to improve performance and how this will be achieved by clarifying and agreeing what the staff are expected to do, how they are expected to behave and how to use these agreements as the basis for measurement, review and preparation of plans for performance improvement and development. The fundamental purpose of this should be to align individual and the Institute objectives so that everything each individual does at work leads to outcomes that further the achievement of SLARI goals. This alignment should be attained through a process of cascading the Institute's objectives from the top level management down to the team or individual levels but reduced in scale and scope at each level. In order to achieve this, the following main areas of organizational performance assessment and management that need improvement were identified:

- (i)** Balance score card-based performance system.
- (ii)** Performance assessment and management.
- (iii)** Performance planning, measures and agreements.
- (iv)** Performance review and assessment.
- (v)** Performance improvement, management and administration.
- (vi)** Performance management 360-degree feedback and reward.
- (vii)** Self assessment and management for improved individual performance.

5.0 CAPACITY ASSESSMENT AT THE ENABLING ENVIRONMENT LEVEL

5.1 Introduction

Organizations do not exist in a vacuum. Each organization is set in a particular environment to which it is inextricably linked. This environment provides multiple contexts that affect the organization and its performance, what it produces, and how it operates. The concept of an enabling environment is key to understanding and explaining the forces that help shape the character and performance of organizations (Scott, 1995). Any effort to diagnose and improve the performance of an organization requires an understanding of the forces outside the organization that can facilitate or inhibit that performance (Savedoff, 1998). Enabling environments support effective and efficient organizations and individuals, and creating such environments is becoming an increasingly important aspect of development assistance (Picciotto and Weisner, 1998). Definitions of enabling environment are numerous and range from all-encompassing to narrow. A typical general definition is that “An enabling environment is a set of interrelated conditions such as legal, bureaucratic, fiscal, informational, political, organizational, and cultural that impact on the capacity of agricultural sector development actors to engage in development processes in a sustainable and effective manner” (Thindwa, 2001).

Organizations need to be able to diagnose the enabling environment, and also build competence to both influence and adapt to it as that environment evolves (Savedoff, 1998). Assessments at the enabling environment level include analysis of the formal rules, informal rules and the capabilities within which the organization operates. The analysis at this level is concerned with finding out (i) the impact of these environmental forces on the mission, performance and capacity of the organization; (ii) the ways in which the environment is friendly or hostile; and (iii) the major opportunities and risks resulting from the environment.

5.2 Findings

The enabling environment level represents the broad national context within which agricultural research for development operates. It is concerned with policy at the highest levels in government, the socioeconomic conditions that enable or constrain agricultural research for development. This level can have immense influence over what happens at the lower levels.

The enabling environment level is often given insufficient attention during most capacity assessment studies because it is seen as too difficult and diffuse to address. This was the same case in this study. Due to the limited time and resources allocated to this assignment, the study was not able to carry out detailed analysis of the enabling environment relevant to SLARI’s operating environment. However, limited interviews and discussions with the participants of the facilitated validation and capacity assessment workshop that was attended by research managers, research scientists and a few key stakeholders as well as reviews of the Government’s effort in putting in place enabling environment for the agriculture sector development in Sierra Leone indicate that there is good progress being made towards this end as outlined below.

5.2.1 Strategies Aimed at Creating Enabling Environment for the Agriculture Sector Development

Following the cessation of civil unrest in Sierra Leone, the country embarked on various initiatives aimed creating enabling environment needed to spur economic growth and poverty reduction. This road to economic growth and poverty reduction for Sierra Leone saw the

development of various development plans and strategies that included (i) Interim Poverty Reduction Strategy Paper; (ii) National Recovery Strategy; (iii) Sierra Leone Vision 2025; (iv) Second Poverty Reduction Strategy Paper: The Agenda for Change; and (v) National Sustainable Agricultural Development Plan among others.

(i) *Interim Poverty Reduction Strategy Paper and National Recovery Strategy:* The Interim Poverty Reduction Strategy Paper (IPRSP) emphasized the continued implementation of sound economic policies to re-launch the economy within an overall framework of good governance. The IPRSP described the country's macroeconomic, structural, social policies and programmes aimed at promoting economic growth and reducing poverty. The IPRSP was constructed around three Pillars that included (i) Good Governance, Peace and Security; (ii) Food Security and Job Creation; and (iii) Growth and Human Development.

(ii) *National Recovery Strategy:* The National Recovery Strategy (NRS) was developed to complement the Interim Poverty Reduction Strategy Paper. The NRS was based on district and local recovery plans that emphasized the consolidation of state authority, peace-building, promotion of reconciliation, enforcement of human rights, resettlement, reintegration and the rebuilding of communities.

(iii) *Sierra Leone Vision 2025:* As part of the new beginning set by IPRSP and NRS, Sierra Leone developed the Vision 2025 in 2005, as the country's national vision or long-term development plan. Vision 2025 gives a strategic diagnosis of the country's past and its present situation; presents alternative possible national futures; and sets out the future that the people have agreed to build. The aim of the Vision is to create a prosperous society that cares about people and the environment and was based on the desire to create a better future for Sierra Leone. A future characterised by the virtuous circle of peace, stability and wealth creation in place of vicious circle of poverty and development.

(iv) *Second Poverty Reduction Strategy Paper:* Following the development of the country's Vision 2025, it became necessary that a comprehensive poverty reduction strategy supporting the Vision and pursuing economic, social and political rebuilding in the country should be developed to deliver the economic growth envisioned in the Vision. In this regard, The Second Poverty Reduction Strategy Paper (PRSP-II): "The agenda for Change" was developed as a comprehensive poverty reduction strategy supporting the Vision and pursuing economic, social and political rebuilding in the country so as to deliver the economic growth envisioned in the Vision.

(v) *National Sustainable Agricultural Development Plan:* The National Sustainable Agriculture Development Plan (NSADP) follows from Vision 2025 and the Second Poverty Reduction Strategy Paper. It outlines the broad framework for putting the objectives of the Government's Agenda for Change into action by providing the roadmap for moving agriculture, forestry and fisheries forward to both address Sierra Leone's growing needs due to population growth and to create additional income to the national economy. NSADP has been formulated to provide guidance for short-, medium- and long-term investment programmes for the agricultural sector. The Vision for NSADP/CAADP is to commercialize agriculture especially through linking of farmers to markets

5.2.2 Enabling Environment for Participatory Planning Process

Review of the process used in the preparation of the above strategies and plans indicate that there were extensive national consultations involving a wide-range of stakeholders in a participatory approach. The participatory approach was characterized by open and frank dialogue between the Government and the people represented by key stakeholders that included cabinet ministers, parliamentarians, non-governmental organizations, members of civil society, the private sector, cooperative associations, local authorities, religious leaders, development partners and beneficiary groups. The participatory methodologies that were used included strategic planning and action process; focus group discussions; chiefdom sensitization meetings; and participatory poverty assessment; sector working group sessions; national and district consultations; and validation workshops for the final documents.

The overall objective of the participatory process was to generate qualitative information on planning and policy formulation, programme design, monitoring and evaluation. This was achieved through (i) sharing of information with the population on the process and their role in formulation of public policy; (ii) generating information on the dimensions, coping mechanisms and trends in national development and poverty; (iii) assessing the impact of government policies, plans and strategies on the poor; and (iv) building the capacity of local communities to analyze problems, identify priorities, propose solutions and establish linkages with policy makers.

5.2.3 Policies Aimed at Creating Enabling Environment for the Agriculture Sector Development

The Government of Sierra Leone's Vision for the agriculture sector is to make agriculture the engine for socioeconomic growth and development through commercial agriculture. The priority agenda underlines that agriculture should contribute, as the major growth sector, to fighting youth unemployment and poverty reduction. In line with this Vision, the Government has identified the agribusiness as a strategic sector for investment because of the possibilities it represents for food security, revenue generation and wealth creation.

In order to realize this, the Government has a critical role in the development of the agricultural sector by creating an enabling environment with a sound economy and infrastructure to stimulate the involvement of the private sector in the provision of rural credit and input supply and output marketing; to strengthen research and extension services; and the empowerment of farmers. Annex 5.1 presents a summary of some of the policies/plans that impact on the agricultural sector development. The Government has formulated these policies/plans in an effort to create an enabling environment for socioeconomic growth and agricultural sector development. Some of these policies/plans are in the areas of agriculture, decentralization, land tenure, crops production, input supply, crop post-harvest technology, livestock production, produce marketing and pricing, agricultural finance/credit, national environment, water, forestry; national trade policy and rural infrastructure among others.

6.0 SLARI CAPACITY DEVELOPMENT RECOMMENDATIONS

6.1 Research Scientists Requirements

Sierra Leone has undergone through a devastating national conflict. During this period most highly skilled research scientists left the country for the safety of their families and for livelihood sustenance. Because of this conflict, the national universities, colleges and polytechnics were not able to train new staff due to lack of teachers and professors. In addition to this, the research scientists that were able to stay are now approaching retirement. Further to this, the agricultural sector is weakened by staff movement to better paying jobs due to low remuneration to staff by Government as well as limited staff development and promotion opportunities. Given this state of affairs, the Government, and SLARI in particular, may find it difficult to fully provide strategic and technical direction for the implementation of key agricultural sector development strategies without external technical assistance.

The findings on the status of the research scientists in terms of current complement, age and gender distribution, level of training and disciplinary mix outlined in Chapters 3.0 and 4.0 paint a very gloomy picture for SLARI. Even NARC and RARC centres that are currently considered to be functional are operating below half of the required research scientist complement. Given this state of affairs, it is recommended that:

(i) Serious effort should be made to put in place at least half of the required staff complements for each research centre and headquarters if meaningful research is to be conducted. The recruitment of the required research scientists should be geared towards attracting highly qualified and competent staff that can be developed to assume higher research responsibility. In this regard, the Institute may need to have a policy of recruiting primarily at the Master's level. However, recruitment of good first degree graduates with a minimum of Second Class Honours-Upper Division may be considered in areas where Masters degree holders are not available. This will ensure that SLARI has access to outstanding young graduates who can be moulded into the Institute's specific requirement for scientists.

(ii) The SLARI Strategic Plan for the period 2012-2021 has been designed to position the Institute strategically to play a critical role in the transformation of the smallholder agriculture from subsistence to an innovative, commercially-oriented and modern agricultural activity as envisaged in NSADP-Smallholder Commercialisation Programme. This transformation is expected to be achieved through the adoption of APVC approach to research for development. In view of this, SLARI should put in place research scientists in the right mix of age, gender and research disciplines/areas of specialization capable of addressing the challenges experienced along the whole APVCs continuum. Some of the key disciplines/areas of specialization that are required include markets and marketing, processing and entrepreneurship, food science and technology, policy and policy analysis and rural sociology among others. In view of this, the main guiding principles for human resource planning and staffing in SLARI should be multidisciplinary mix of research scientists, staff ratios and succession planning. The succession planning should be aimed at ensuring that young in-coming staff have reasonable period to work and learn from the experienced mature staff.

(iii) The scientists-technical-administrative staff ratio of 1:2:4 can be applied on average bearing in mind that some programmes like social sciences may have smaller ratios while others may have higher ratios. The ratios should, therefore, not be applied uniformly but should depend on each centre and the complexity of the programmes. The projected staffing needs of SLARI

will need to take into account the current changes in the institution, agricultural sector and national development. Some of these changes and demands include the need for sustainable funding of agricultural research, technology transfer, application of new frontiers of science, policy analysis and development as well as managing new programmes among others.

(iv) In order to be able to attract, retain and effectively utilize human resources with specific knowledge, skills, attitudes and motivations, SLARI will need to put in place a well-designed grade, promotion and reward system characterized by:

- Compensation policies that are simple in concept and design.
- Grades and salaries that are based on detailed job analysis and evaluations of the size of the job in terms of knowledge, skill and responsibility requirements.
- Job titles that allow colleagues and outsiders to readily identify the seniority, position and competence of the individual.
- Promotion and financial incentives provided throughout the entire career of a researcher.
- Promotion criteria and requirements that are well specified and place primary emphasis on demonstrated job performance.
- Accelerated advancement possibilities provided for especially competent and highly motivated researchers who have made exceptionally valuable contribution to research.
- Income growth curve that corresponds to the underlying rate of growth of the individual productivity.
- Dual career ladders designed for scientists to attain the status and salary levels of senior managers without moving into management.
- Teaching and consultancy assignments for mature scientists encouraged within an agreed policy framework.

6.2 Individual Level Capacity Development

In order to become and remain productive, a research scientist requires both formal and on-the-job training. Research activities are, by their very nature, highly skill-intensive. Some of these skills are initially acquired by formal academic training. However, to maintain up-to-date knowledge and skills in their areas of specialization, research scientists must receive further specialized training on regular basis throughout their career. In order to meet the scientific human resource requirement, SLARI will, therefore, need to develop and operationalize appropriate apprentice-to-professional research staff development programme characterized by rather specific training needs at various stages of their career development.

6.2.1 Short-term Capacity Development

In order to maintain up-to-date knowledge and skills of research scientists in their respective areas of specialization, SLARI will need to develop and operationalize an appropriate short-term capacity development programme. The short-term training courses under this programme should be offered to research scientists to enable them acquire new knowledge, skills, techniques, methods and attitudes. The aim of the short-term training courses should be to improve the research scientist productivity, job satisfaction, motivation and leadership as well as maintaining their scientific and professional competence. The short-term training courses should be needs-based, specific and goal-oriented and should take a variety of forms ranging from structured courses to informal activities.

Table 6.1 shows the capacity development strategic areas of focus at the enabling environment, organizational and individual levels. Although these capacity development strategic areas of

focus appear similar at each of the three levels, the focus of capacity development is different at each level. At the enabling environment, the focus is in putting in place the rules of the game while at the organizational level the focus is in developing organizational capacity to be able to play by the rules of the game set at the enabling environment. Similarly, the focus at the individual level is on developing knowledge, skills and attitudes of the organization's players (the staff) to play by the rules of the game.

Table 6.2 shows the capacity development strategic areas of focus and areas of capacity development for individual, organizational and enabling environment levels. At the individual level, the development of knowledge, skills and attitudes of top level research managers, middle level research managers and research scientists under each of the capacity development strategic areas of focus should be done using different modes of training. Table 6.3 shows some of the available short- and long-term modes of training in terms of their broad objectives, duration, target audience, location and expected outcome. The available short-term modes of training include (i) induction training; (ii) on-the-job coaching and mentoring; (iii) study tours, workshops and conferences; (iv) technical short-term courses; (v) postdoctoral and research attachment fellowships; (vi) agricultural research management training; and (vii) long-term postgraduate training. Of the seven modes of training, agricultural research management is the least mode of training undertaken in developing countries NARIs. As a result of this, many NARIs with adequate financial, physical and human resources have ended up being ineffective and less productive in technology generation and transfer.

To remain effective, SLARI must continually develop its human resources through short-term training courses outlined in Table 6.2 among others. However, this is a very expensive undertaking and, therefore, SLARI should emphasize local training of its staff so as to ensure cost-effectiveness and sustainability. This approach requires the creation and maintenance of a local pool of trainers within the Institute to foster human resource development on a continuous basis through short-term courses and workshops. This would require training of trainers (ToT) through the following six steps process:

- (i) Identification of priority areas in which SLARI needs to train trainers.
- (ii) Identification of suitable individuals to be trained as trainers in each of the identified priority area of training.
- (iii) Identification of suitable external trainers from local and overseas institutions to train the selected trainers.
- (iv) Bringing together the identified external trainers to develop course content, prepare training materials and train the selected local trainers.
- (v) Utilization of the trained local trainers to conduct similar training courses to other members of staff.
- (vi) Utilization of the external trainers to evaluate the performance of the trained local trainers

6.2.2 Long-term Capacity Development

Academic and professional training enable staff to gain certificates required for advancement as prescribed in schemes of service. This type of training usually takes one to four years, depending on the type of training and is offered at training institutions such as universities and colleges either within or outside the country. SLARI should, therefore, develop and implement an appropriate long-term capacity development programme. Since training in universities, colleges and institutions have minimum requirements for admission, the ability to undertake postgraduate training should be an important criteria in the recruitment of new graduates to the Institute. Opportunities for postgraduate training should be made available for young scientists early in

their careers but after a period of at least one year of apprenticeship. While postgraduate training is essential for all research scientists, it should not be seen as a substitute for on-the-job training. Structured on-the-job training prior to postgraduate training helps provide a relevant context for specialization in higher degree programmes.

Postgraduate training can be offered within and outside the country. However, training in the country should be preferred in disciplines where facilities, standards and supervision capacity are adequate and where the relevance of the training is high. In view of this, SLARI should develop and strengthen relations and partnerships with local universities so as to influence their content of postgraduate training and to collaborate in the required theses research. This approach has a double advantage of solving the identified agricultural research priorities while at the same time providing opportunities for the scientists to earn their postgraduate degrees and improve their performance and motivation.

In cases where postgraduate training is undertaken outside the country, SLARI should seek ways of improving the relevance of the training through special arrangements with the relevant universities and funding organizations. These arrangements should include (i) postgraduate candidates returning back to Sierra Leone after taught course work to collect data for their dissertations and theses on research topics of national priority; and (ii) postgraduate candidates completing some of the course work at overseas universities and return to do their dissertations and theses at a university in Sierra Leone. Over the long-term, these arrangements would strengthen the national postgraduate training capacity while at the same time responding to issues of cost-effectiveness and relevance of training.

Postgraduate training opportunities at the Master's level should be made available to all trainable research scientists in the Institute. Research scientists with Masters degrees should then advance in the scheme of service depending on their individual performance. Training at Doctorate level should not be offered to all research scientists with Masters degrees. The doctoral level training should be limited to cases where specialization is required for guiding and leading research programmes and projects. However, research scientists wishing to undertake Doctorate training locally and who are willing to use their usual research activities as basis for their theses should be encouraged and supported to do so as long as there is only a minimal cost to the Institute.

Table 6.4 shows summary of the number and level of required long-term training based on the current research scientists by research centres and headquarters. More details in terms of individual names of current research scientists by centres; current age; discipline/area of specialization; highest qualification and date acquired; and the required further long-term training are shown in Annex 6.1. This information shows a higher request for PhD training by centres than Masters, presumably because there are very few Bachelors degree holders in the centres. The high request for PhD training is, however, desirable considering the need to quickly develop enough PhD holders to provide leadership to research programmes and assist in the training, supervision and mentoring of the younger research scientists. However, it takes a long time to train a PhD and, therefore, different strategies may need to be devised to obtain a few PhD holders to sustain research programmes in the mean time. Some of these strategies may include short-term contracts, exchange programmes or sabbaticals from universities and other research institutions.

6.3 Organizational Level Capacity Development

The capacity of an organization is embedded in the ability of its individuals to work together within established rules and values and to interact with a wide range of organizations involved in agricultural research for development that share common objectives. The individual level of capacity assessment considers the individual's capacity to function efficiently and effectively within an organization and within the broader environment. The SLARI organizational level is expected to make informed interpretation and application of the rules of the game spelt out at the enabling environment level and ensure that its players (the staff) are well aware of the rules of the game and play by them in carrying out their research obligations/functions.

The main capacity development strategic areas of focus that are most commonly encountered in performance focussed agricultural research organizations were analyzed in Chapter 4.0. These capacity development strategic areas of focus have been shown to be the main domains where capacity change happens most frequently and, therefore, can drive the formulation of a capacity development response in SLARI. The eight strategic areas of focus are not necessarily distinct as they spill over and reinforce one another. An attempt was made to assess what functional capacities are available or needed for optimal effectiveness and efficiency within the eight capacity development strategic areas of focus at the SLARI organizational level. This was done using the status rating and the major organizational constraints that significantly influence each of the capacity development strategic areas of focus. The priority rating of the main capacity development areas under each of the capacity development strategic areas of focus that need improvement in order to strengthen the SLARI organizational capacity are shown in Table 6.2.

6.4 Enabling Environment Level Capacity Development

The assessment results of the enabling environment indicate that there is a concerted government effort to establish enabling environment for national economic growth and agricultural sector development. However, there is need for further assessment to establish the extent of coverage and identify areas of enabling environment that have not been addressed. This assessment should be geared towards establishing the impact of these environmental forces on SLARI's Mission and performance; the ways in which the environment is friendly or hostile; and the major opportunities and risks resulting from the environment. This information would then enable SLARI to develop appropriate strategies for building capacity and competence to both influence and adapt to the environment as it evolves. The assessment of the enabling environment should be designed to look at capacity development strategic areas of focus similar to those analyzed at the organizational level.

The role of SLARI in the establishment of the enabling environment is to identify the main facilitating or constraining factors or dimensions in its operating environment and then lobby and advocate for suitable reforms to be put in place so as to create the desired enabling environment. In carrying out the lobbying and advocacy, SLARI may need to collect, analyze and provide data and information on some of the constraining aspects and dimensions of the current enabling environment to justify why and in what way the particular aspect or dimension is constraining its performance. This information will then enable the policy makers to make informed decisions.

Table 6.1: Capacity development strategic areas of focus at the enabling environment, organizational and individual levels

Capacity development levels and strategic areas of capacity development			
1.0	Enabling environment level (<i>Putting in place the rules of the game</i>)	2.0	Organizational level (<i>Developing organizational capacities to apply the rules of the game</i>)
3.0	Individual level (<i>Developing skills, knowledge and attitudes to play by the rule of the game</i>)		
1.1	National and sector programming and management	2.1	Research programming and management
3.1			Research programming and management
1.2	Human resource development and management	2.2	Human resource development and management
3.2			Human resource development and management
1.3	Financial resource mobilization and management	2.3	Financial resource mobilization and management
3.3			Financial resource mobilization and management
1.4	Physical infrastructure development and management	2.4	Physical infrastructure development and management
3.4			Physical infrastructure development and management
1.5	Leadership and management	2.5	Organizational leadership and management
3.5			Organizational leadership and management
3.6	Governance and process management	2.6	Corporate governance and process management
3.6			Corporate governance and process management
1.7	Governing and operating structure	2.7	Organizational governing and operating structure
3.7			Organizational governing and operating structure
1.8	Performance assessment and management	2.8	Organizational performance assessment and management
3.8			Organizational performance assessment and management

Table 6.2: Capacity development strategic areas of focus and areas of capacity development for individual, organizational and enabling environment levels

Capacity development strategic areas of focus and their respective areas of capacity development (<i>XXX – High priority, XX – Medium priority and X – Low priority</i>)	Individual level			Organization al level	Enabling environment level
	Top level research managers	Middle level research managers	Research scientist		
1.0 Research Programming and Management					
1.1 Strategic planning at institutional, centre and programme levels of management	XXX	XXX	XX	XXX	XX
1.2 Research programme development and management	XXX	XXX	XX	XXX	X
1.3 Priority setting in agricultural research for development	XXX	XXX	XX	XXX	XX
1.4 Integrated agricultural research for development and innovation platforms	X	XX	XXX	XX	-
1.5 Mapping, analysis, upgrading and promotion of agricultural product value chains	X	XX	XXX	XX	-
1.6 Competitive grant project proposal writing	X	XX	XXX	XX	X
1.7 Gender analysis and mainstreaming in agricultural research	XX	XXX	XXX	XXX	X
1.8 Management, monitoring and evaluation of research programmes and projects	XX	XXX	XXX	XXX	X
1.9 Scientific writing, presentation and publishing	X	XX	XXX	XX	-
1.10 Research project proposal formulation, approval and implementation processes and procedures	X	XXXX	XXX	XXX	-
1.11 Preparation and approval of annual work plans and budgets	XX	XXX	XXX	XXX	-
1.12 Technology and innovation packaging and transfer	XX	XXX	XXX	XXX	-
1.13 Policy, socioeconomic and markets analysis	XX	XXX	XXX	XXX	X
1.14 Research impact assessment	XXX	XXX	XXX	XXX	X
1.15 Intellectual property rights and institutional research policy	XXX	XXX	XX	XXX	X

Capacity development strategic areas of focus and their respective areas of capacity development (<i>XXX – High priority, XX – Medium priority and X – Low priority</i>)	Individual level			Organization al level	Enabling environment level
	Top level research managers	Middle level research managers	Research scientist		
1.16 Research methodologies and experimental designs	X	XX	XXX	XX	-
1.17 Statistical packages, data analysis and report writing	X	XX	XXX	XX	-
1.18 Information technology and communication	XX	XX	XXX	XXX	-
1.19 Management and up scaling of agricultural Knowledge and information	XX	XX	XXX	XXX	-
1.20 Research programming and management information systems	XX	XXX	XX	XXX	-
2.0 Human Resource Development and Management					
2.1 Human resource long-term planning and deployment	XXX	XXX	XX	XXX	XX
2.2 Human resource recruitment and training	XXX	XXX	XX	XXX	XX
2.3 Performance appraisal and improvement	XXX	XXX	XX	XXX	XX
2.4 Staff compensation and motivation schemes and policies	XXX	XXX	XX	XXX	XX
2.5 Team building and management	XXX	XXX	XX	XXX	-
2.6 Staff mentoring and nurturing	XX	XXX	XXX	XXX	-
2.7 Human resource development and management information systems	XX	XXX	XX	XXX	-
3.0 Financial Resource Mobilization and Management					
3.1 Long-term financial resource requirement planning	XXX	XXX	XX	XXX	X
3.2 Financial management cycle in a research institution	XXX	XXX	XX	XXX	X
3.3 Financial reports and the language of finance	XXX	XXX	XX	XXX	X
3.4 Budgeting and budgetary control	XXX	XXX	XX	XXX	X
3.5 Financial policies, accounting systems and procedure manuals	XXX	XXX	XX	XXX	X
3.6 Promoting programmes to funding agencies	XXX	XXX	XX	XXX	-

Capacity development strategic areas of focus and their respective areas of capacity development (XXX – High priority, XX – Medium priority and X – Low priority)	Individual level			Organization al level	Enabling environment level
	Top level research managers	Middle level research managers	Research scientist		
3.7 Fraud/embezzlement detection and prevention	XXX	XXX	XX	XXX	-
3.8 Business plans and financial resource mobilization	XXX	XXX	XX	XXX	-
3.9 Donor relations and confidence building	XXX	XXX	XX	XXX	X
3.10 Monitoring and evaluation in financial management	XXX	XXX	XX	XXX	X
3.11 Financial resource development and management information systems	XXX	XXX	XX	XXX	-
4.0 Physical Infrastructure Development and Management					
4.1 Physical infrastructure and equipment long-term planning	XXX	XXX	XX	XXX	X
4.2 Physical infrastructure development and maintenance	XXX	XXX	XX	XXX	X
4.3 Physical infrastructure and equipment acquisition, allocation and sharing	XXX	XXX	XX	XXX	-
4.4 Equipment repair, servicing and maintenance	XX	XX	XX	XXX	-
4.5 Management of procurement and supplies	XXX	XXX	XX	XXX	X
4.6 Physical infrastructure and equipment accounting, assessment and disposal	XXX	XXX	X	XXX	X
4.7 Information technology infrastructure and information communication systems	XXX	XXX	XX	XXX	X
4.8 Physical infrastructure and equipment development and management information systems	XXX	XXX	X	XXX	-
5.0 Organizational Leadership and Management					
5.1 Managing change in agricultural research systems	XXX	XXX	XX	XXX	XX
5.2 Facilitation and management of meetings and workshops	XXX	XXX	XX	XXX	-
5.3 Crisis management and conflict resolution	XXX	XXX	XX	XXX	X
5.4 Participatory and inclusive leadership and	XXX	XXX	XX	XXX	X

Capacity development strategic areas of focus and their respective areas of capacity development (<i>XXX – High priority, XX – Medium priority and X – Low priority</i>)	Individual level			Organization al level	Enabling environment level
	Top level research managers	Middle level research managers	Research scientist		
management style					
5.5 Transparent and accountable leadership and management	XXX	XXX	XX	XXX	X
5.6 Information sharing and communication in management	XXX	XXX	X	XXX	X
5.7 Total quality management	XXX	XXX	XX	XXX	X
5.8 Self assessment and management for improved leadership and management	XXX	XXX	XXX	XX	-
5.9 The practice of delegation and supervision	XXX	XXX	XXX	XXX	-
5.10 Effective stress and time management	XXX	XXX	XXX	XXX	-
5.11 Organizational leadership and management information systems	XXX	XXX	X	XXX	X
6.0 Corporate Governance and Process Management					
6.1 Financial and assets audit	XXX	XX	X	XXX	X
6.2 Organizational planning, monitoring and evaluation	XXX	XX	X	XXX	X
6.3 Delegation of authority and accountability	XXX	XXX	XX	XXX	-
6.4 Corporate communication, marketing and legal aspects	XXX	XXX	XX	XXX	-
6.5 Partnerships and strategic alliances	XXX	XXX	XX	XXX	X
6.6 Problem solving and the decision making process	XXX	XXX	XX	XXX	-
7.0 Organizational Governing and Operating Structure					
7.1 Organizational governing and operating structures	XXX	XX	X	XXX	X
7.2 Cascading organizational governing and operating structures	XXX	XX	X	XXX	-
7.3 Institutional linkages, collaborations and networking	XXX	XX	X	XXX	X
8.0 Organizational Performance Assessment and Management					

Capacity development strategic areas of focus and their respective areas of capacity development (<i>XXX – High priority, XX – Medium priority and X – Low priority</i>)	Individual level			Organization al level	Enabling environment level
	Top level research managers	Middle level research managers	Research scientist		
8.1 Balance score card-based performance system	XXX	XXX	XX	XXX	X
8.2 Performance assessment and management	XXX	XXX	XX	XXX	X
8.3 Performance planning, measures and agreements	XXX	XXX	XX	XXX	X
8.4 Performance review and assessment	XXX	XXX	XX	XXX	X
8.5 Performance improvement, management and administration	XXX	XXX	XX	XXX	X
8.6 Performance management 360-degree feedback and reward.	XXX	XXX	XX	XXX	X
8.7 Self assessment and management for improved individual performance	XXX	XXX	XXX	XXX	-

Table 6.3: Short- and long-term modes of developing individual capacities of research managers and scientists

Training mode	Objective	Duration	Target	Location	Expected outcome
1.0 Induction	<p>1.1 To enable staff to become acquainted with SLARI mandate, goals, rules and regulations</p> <p>1.2 To meet other staff and become acquainted with programmes and activities within a short time</p> <p>1.3 To facilitate effective staff socialization</p>	Few days to one month	All new staff	In SLARI Headquarters and Centres	Faster integration and assimilation of staff into the institute
2.0 On-the-job coaching and mentoring	<p>2.1 To enable researchers to learn techniques and methods</p> <p>2.1 To coach and mentor young researchers on the scientific and research process</p>	Continuous	All but emphasis on young research scientists	In SLARI Headquarters, Centres and in other relevant institutions	Improved research productivity, job satisfaction, motivation and leadership
3.0 Study tours, workshops and conferences	<p>3.1 To broaden staff experience and exchange views on technologies, techniques and methods</p> <p>3.2 To enable staff to acquire new skills, knowledge and attitudes</p>	Few days to one month	All depending on specific needs and problem	Within and outside the country and in other relevant institutions	Broadened staff experience and improved research productivity
4.0 Technical short courses	<p>4.1 To acquire practical skills, techniques and methods</p> <p>4.2 To fill specific knowledge and skills gaps</p> <p>4.3 To update scientific and technological knowledge</p>	Few weeks to six months	All depending on specific needs and identified knowledge and skills gaps	Within and outside the country and in other relevant institutions	Enhanced research skills and knowledge, improved research leadership and better career prospects
5.0 Postdoctoral and research attachment fellowships	<p>5.1 To upgrade skills of researchers in specialized areas in which local experience and facilities are lacking.</p> <p>5.2 To improve knowledge, skills and professional contacts</p>	Few months to one year	MSc or PhD degree holders	At IARCs, universities or other institutions	Improved leadership, technical skills, knowledge and professional

Training mode	Objective	Duration	Target	Location	Expected outcome
					contacts
6.0 Agricultural research management	<p>6.1 To develop skills in research planning, management and budgeting</p> <p>6.2 To improve capacity for planning, development and management of research resources</p> <p>6.3 To improve supervisory, management and leadership skills</p> <p>6.4 To develop skills in performance management, monitoring and evaluation</p>	Few days to one month	Top and middle level research managers, programme coordinators and project leaders	Within and outside the country and in other relevant institutions	Improved planning, managerial, leadership, and motivation skills and knowledge
7.0 Long-term postgraduate training	<p>7.1 To increase knowledge and upgrade skills and research capability</p> <p>7.2 To enable staff to achieve academic advancement</p>	One year to four years	BSc or MSc degree holders	At local or overseas universities or other relevant institutions	Improved research capability, leadership and better career prospects

Table 6.4: Number and level of required long-term training based on the current research scientists

Research centres and headquarters		Number and level of required long-term training	
		MSc/MPhil	PhD
1.0	Njala Agricultural Research Centre	1	16
2.0	Rokupr Agricultural Research Centre	3	8
3.0	Kabala Horticultural Crops Research Centre	2	3
4.0	Teko Livestock Research Centre		3
5.0	Freetown Fisheries Research Centre		4
6.0	Kenema Forestry and Tree Crops Research Centre	0	6
7.0	Magbosi Land and Water Research Centre	5	5
8.0	SLARI headquarters	0	2
Total for SLARI		11	47

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ANNEXES

Annex 1.1: Terms of Reference and Scope of Services

Consultancy to Develop Analytical Briefs and Survey Reports on Capacity Needed for Agricultural Innovation in Sierra Leone. REF: NSF4/4.1.1

Background

The Forum for Agricultural Research in Africa (FARA) is the apex organization for agricultural research for development in Africa and the AUC/NEPAD mandated institution to lead implementation of Pillar IV of the Comprehensive Africa Agriculture Development Programme (CAADP) focusing on generation, dissemination and adoption of agricultural innovations. Harnessing the development and poverty-reducing potential of CAADP depends crucially on the effectiveness, efficiency and relevance of agricultural research institutions and services in addressing the challenges facing African agriculture.

The mission of FARA is to create broad-based improvements in agricultural productivity, competitiveness and markets by supporting Africa's sub-regional organizations in strengthening the capacity of the NARS for agricultural innovation. FARA delivers on its mandate through four mutually-reinforcing Networking Support Functions (NSFs) concerned with advocacy and policy analysis (NSF1/3); knowledge sharing and dissemination (NSF2); capacity strengthening (NSF4); and development of partnerships and strategic alliances (NSF5). The NSFs mobilize and support FARA's constituents and partners (Sub-regional organisations and organisations of the national Agricultural Research Systems) to undertake activities that generate continental spillovers and public goods.

Through the NSF4 on Capacity Strengthening, FARA has the strategic objective of establishing and updating the capacity strengthening needs for agricultural innovation in Africa. This entails comprehensive assessments of the capacity needs for innovation in a number of African countries. The process is continuous, but will initially target countries emerging from conflict exemplified by Sierra Leone, Liberia, and Guinea. In-depth data collection and analysis of agricultural systems in these countries will result in better insights into the underlying trends and issues relating to agricultural research, advisory services and innovation capacity, which will assist policymakers, R&D managers, and other stakeholders at the national and regional levels in making better informed decisions about investment priorities and reform measures towards building functional agricultural innovation systems. This exercise also feeds into the country's CAADP roundtable process especially at the post-compact stage.

In this respect, FARA's NSF4 will undertake assessments of the functionality and capacity needs of the national agricultural innovation systems of selected African countries. This activity line will target countries that have shown proactive engagement in the CAADP process and are characterized by ravaged infrastructure and dire capacity needs due to conflict-induced destruction and human capital flight. The surveys are expected to be undertaken sequentially and will be embedded in the annual work plans. Context-specific ToRs will be developed for each assignment, depending on the targeted country. The scope of activity may also vary e.g. assessment of the NARI or the entire NARS, as may be dictated by availability of funds and the obtaining development priorities of the targeted country.

This TOR targets the assessment of Sierra Leone Agricultural Research Institute (SLARI) and its functional relationship with the wider Sierra Leone national agricultural research system (NARS) as an initial activity in a series of annual surveys being planned by NSF4 that will cover other countries emerging from conflict. Sierra Leone is a CAADP post-compact country and its government has shown proactive interest in developing the agricultural sector. In this assignment, NSF4 will team up with NSF1/3 and NSF5. Such inter-NSF collaborative efforts promote efficiency in conducting activities that mutually contribute to the FARA results. The role of NSF1/3 in the assignment is to facilitate functional reforms and the CAADP country processes, NSF4 is concerned with assessment of organization and institutional capacity, and NSF5 will foster partnerships and alliances in promoting innovation platforms based on integrated agricultural research for development (IAR4D).

The SLARI assignment will also benefit from capacity development through mentorship by a relatively functional African NARI and an Africa-based CGIAR organization. The Sierra Leone Ministry of Agriculture has opted to specifically adopt the KARI system of programme approach to agricultural research. Moreover, Sierra Leone is part of the riparian countries currently considering development of irrigated rice along the Mano River. Therefore, key personnel from the Kenya Agricultural Research Institute (KARI) and AfricaRice will also participate in the exercise at the request of the Sierra Leone Government. This is chiefly to facilitate organizational mentoring support regarding reprogramming and reform of SLARI centre activities and development of the rice value chain. The costs of these parallel activities will be borne by the other collaborative NSFs. The Government of Sierra Leone is also expected to fund partial costs of the mission.

Purpose

This ToR pertains only to the stipulated role of NSF4 in the joint assignment. The main purpose is to undertake the assessment of capacity needs for innovation of the Sierra Leone Agricultural Research Institute (SLARI). The activity will be undertaken by a consultant with backup from FARA staff. The identified agricultural innovation capacity deficits will aid the design of appropriate capacity strengthening interventions.

Objectives

Specific objectives include:

- Diagnostic audit of SLARI identifying the bottlenecks, constraints to and opportunities for agricultural innovation.
- Identification of specific innovation capacity strengthening needs.
- Recommending capacity strengthening investment priorities of SLARI within the wider agricultural innovation systems of Sierra Leone.

Scope

A consultant will be engaged to undertake home-based desk reviews, joint workshop facilitation with coordinators of SLARI research centres, and – where necessary - field consultative surveys to gauge the functionality of SLARI within the wider agricultural sector of Sierra Leone. He/she will also be required to interface with on-going partnership and mentorship engagements between KARI/SLARI/AfricaRice.

Specifically, the consultant will undertake the following:

- (a) Develop a methodology, consultation plan and appropriate survey instruments for the assignment.
- (b) Undertake comprehensive assessments of the human, organizational and institutional capacity to undertake innovations along the respective commodity value chains of focus by the SLARI Research Centres.
- (c) Compile and submit assessment reports and analytical briefs.
- (d) Provide recommendations for innovation capacity needs and institutional change.
- (e) Present the assessment report for validation before a SLARI/FARA-constituted panel.

Reporting

The consultant will report to the Director, NSF4 - Capacity Strengthening.

Deliverables

The deliverables from the consultant will include:

- Methodology for undertaking the study complete with the analytical framework by 30th September, 2011.
- Draft Report on the Capacity Needed for Agricultural Innovation in Sierra Leone by 15th October, 2011. However, in order to interface this assignment with the on-going partnership and mentorship engagements between KARI/SLARI/AfricaRice, this date shall depend on when the validation and consensus building workshop for the SLARI Planning documents shall be held.
- Final Report on the Capacity Needed for Agricultural Innovation in Sierra Leone that incorporates comments Draft Report by 30th October, 2011. This shall also depend on when the validation and consensus building workshop for the SLARI Planning documents shall be held and how soon comments can be received.

FARA's Responsibilities

FARA will avail relevant documents to the consultants and facilitate logistical arrangements for field surveys. The reports and analytical briefs will be collated (where necessary), edited, printed and disseminated by FARA as part of the knowledge hub activities of the Networking Support Function 4 on Capacity Strengthening.

Assignment Period

10 effective consultancy days spread out in six weeks.

Annex 2.1: List of people who participated in the capacity assessment

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41	Richard Bockarie	SLARI HQ-Communication	078301935	rihiebock@yahoo.com	Freetown, Sierra Leone
42	James Alfred	CAF			Freetown, Sierra Leone
43	James Koroma	Environmental Protection Agency (EPA)			Freetown, Sierra Leone
44	Dr. Mohamed Lahai	NU School of Agric.	076617229	drmtlahai@yahoo.com	Njala, Sierra Leone
45	Dr. A.B Rashid Noah	NU School of Agric.	033381371	rashidnoah@yahoo.com	Njala, Sierra Leone
46	A.S. Njaujah	SLARI-RARC	076650747	asngaujah@yahoo.com	Rokupr, Sierra Leone
47	Mohamed Blango	NU School of Agric.	033426941	Medbel2003@yahoo.com	Njala, Sierra Leone
48	Josephine Koroma	SLARI Finance Office	078963180	bjmahayei@yahoo.co.uk	Freetown, Sierra Leone
Secretariat and Logistics					
49	P.S.George	SLAR HQ	076 620 898	psgeorge1025@yahoo.com	Freetown, Sierra Leone
50	N.C. Vincent	SLARI HQ-ICT	033 351 238	cecilvin1@hotmail.com	Freetown, Sierra Leone
51	Mrs. Christine Jones	SLARI HQ	07864962/033410483	Christine2007jones@yahoo.com	Freetown, Sierra Leone
52	Hassan Turay	SLARI HQ	033 453 374	Turayhassan15@yahoo.com	Freetown, Sierra Leone
53	Henry Thomas	SLARI HQ	076610753	dowuhenry@yahoo.com	Freetown, Sierra Leone

Annex 3.1: The main duties that may be performed by the middle level research managers and research scientists

(a) Middle Level Research Managers

The jobs performed by the middle level research managers are at the centre/programme level of operation. The general job description for the middle level research managers is, therefore, to ensure effective and efficient development, implementation and management of research programmes so as to deliver the centre and Institute mandates. The main duties that should be performed by the middle level research managers under each of the broad strategic management areas of focus as cascaded down from the main duties performed by the top level research managers but reduced in scale and scope to centre/programme level of operation may include the following:

(i) Research planning and management

- Develop and implement centre/programme strategic plans aligned to the institutional goals and objectives.
- Develop and implement operational plans to operationalize centre/programme strategic plans.
- Develop and implement rolling annual work plans linked to centre/programme and staff annual performance
- Develop and implement effective and efficient centre/programme administration and procurement services delivery systems and processes.
- Develop, implement and continuously update centre/programme research planning and management information systems.

(ii) Generation and promotion of knowledge, information and technologies

- Identify and prioritize challenges and constraints facing centre/programme areas of focus.
- Develop and review centre/programme research project proposals required to address identified priority research constraints.
- Develop and operationalize appropriate centre/programme research project proposal implementation and management mechanisms.
- Develop and operationalize appropriate centre/programme management, monitoring and evaluation mechanisms.
- Develop, implement and continuously update centre/programme knowledge, information and technologies generation and promotion information systems.

(iii) Knowledge management and scaling up of technological innovations

- Develop and operationalize appropriate mechanisms for up-scaling centre/programme knowledge, information and technologies.
- Develop and operationalize beneficial centre/programme knowledge and information outreach partnerships and strategic alliances.
- Develop and operationalize effective and efficient centre/programme knowledge and information management systems.
- Develop and implement effective and efficient centre/programme information and communication technology infrastructure and systems.
- Develop, implement and continuously update centre/programme knowledge management and up-scaling of technological innovations information systems.

(iv) Human resource planning, development and management

- Determine and document centre/programme human resource requirements.
- Develop and implement centre/programme human resource staffing processes and procedures.
- Develop and implement apprentice-to-professional staff development procedures.
- Develop and implement performance based management system.
- Develop and implement staff compensation/motivation schemes, policies and procedures.
- Develop, implement and continuously update centre/programme human resource development and management information systems.

(v) Financial resource planning, mobilization and management

- Formulate and implement centre/programme long-term financial requirement plan and effective strategies to mobilize and manage financial resources.
- Develop and implement centre/programme policies, systems and procedures for allocating financial resources to optimize their use.
- Develop and implement centre/programme policies, systems and procedure manuals for guiding the utilization of financial resources.
- Develop and implement centre/programme financial accounting systems and procedures for preparing periodical financial reports and internal and external audits.
- Develop, implement and continuously update centre/programme financial resource mobilization and management information systems.

(vi) Physical resources planning, development and management

- Prepare and implement centre/programme long-term physical resources plan and management structure.
- Prepare and implement strategies to acquire, develop and manage centre/programme physical resources.
- Prepare and implement centre/programme policies, systems and procedures for allocating, sharing and maintenance of physical resources to optimize their use.
- Prepare and implement centre/programme physical resources accounting, assessment and disposal systems and procedures.
- Develop, implement and continuously update centre/programme physical resource development and management information systems.

(vii) Corporate governance, communication and marketing

- Develop and implement effective and efficient centre/programme planning and management systems.
- Develop and implement effective and efficient centre/programme monitoring and evaluation systems.
- Develop and implement effective and efficient centre/programme internal financial and asset audit systems.
- Develop and operationalize effective centre/programme corporate communication and marketing products and services.
- Develop, implement and continuously update centre/programme corporate communication and marketing information systems.

(b) Research Scientist's Level

The jobs performed by the middle level research managers are at the programme/project level of operation. The general job description for the research scientist's level is, therefore, to develop, implement and manage demand-driven research projects so as to deliver the research programmes and centre mandates. The main duties that should be performed by the research scientists under each of the broad strategic management areas of focus as cascaded down from the main duties performed by the top level research managers but reduced in scale and scope to programme/project level of operation may include the following:

(i) Research planning and management

- Contribute to the development and implementation of programme/project strategic plans aligned to the institutional goals and objectives.
- Contribute to the development and implementation of operational plans to operationalize programme/project strategic plans.
- Contribute to the development and implementation of rolling annual work plans linked to programme/project and staff annual performance.
- Contribute to the development and implementation of effective and efficient programme/project administration and procurement services delivery systems and processes.
- Contribute to the development, implementation and continuous updating of programme/project research planning and management information systems.

(ii) Generation and promotion of knowledge, information and technologies

- Identify and prioritize challenges and constraints facing programme/project areas of focus.
- Develop, present and defend research project proposals required to address identified priority research constraints.
- Develop and operationalize appropriate research project proposal implementation and management mechanisms.
- Develop and operationalize appropriate programme/project monitoring and evaluation mechanisms.
- Contribute to the development, implementation and continuous updating of programme/project knowledge, information and technologies generation and promotion information systems.

(iii) Knowledge management and scaling up of technological innovations

- Develop and operationalize appropriate mechanisms for up scaling programme/project knowledge, information and technologies.
- Develop and operationalize beneficial programme/project knowledge and information outreach partnerships and strategic alliances.
- Develop and operationalize effective and efficient programme/project knowledge and information management systems.
- Develop and implement effective and efficient programme/project information and communication technology infrastructure and systems.
- Contribute to the development, implementation and continuous updating of programme/project knowledge management and scaling up of technological innovations information systems

(iv) Human resource planning, development and management

- Contribute to the determination and documentation of programme/project human resource requirements.

- Contribute to the development and implementation of programme/project human resource staffing processes and procedures.
- Contribute to the development and implementation of programme/project apprentice-to-professional staff development procedures.
- Contribute to the development and implementation of programme/project performance based management system.
- Contribute to the development and implementation of programme/project staff compensation/motivation schemes, policies and procedures.
- Contribute to the development, implementation and continuous updating of programme/project human resource development and management information systems.

(iv) Financial resource planning, mobilization and management

- Contribute to the formulation and implementation of programme/project long-term financial requirement plan and effective strategies to mobilize and manage financial resources.
- Contribute to the development and implementation of programme/project policies, systems and procedures for allocating financial resources to optimize their use.
- Contribute to the development and implementation of programme/project policies, systems and procedure manuals for guiding the utilization of financial resources.
- Contribute to the development and implementation of programme/project financial accounting systems and procedures for preparing periodical financial reports and internal and external audits.
- Contribute to the development, implementation and continuous updating of programme/project financial resource mobilization and management information systems.

(vii) Physical resources planning, development and management

- Contribute to the preparation and implementation of programme/project long-term physical resources plan and management structure.
- Contribute to the preparation and implementation of strategies to acquire, develop and manage programme/project physical resources.
- Contribute to the preparation and implementation of policies, systems and procedures for allocating, sharing and maintenance of programme/project physical resources to optimize their use.
- Contribute to the preparation and implementation of programme/project physical resources accounting, assessment and disposal systems and procedures.
- Contribute to the development, implementation and continuous updating of programme/project physical resource development and management information systems.

(vii) Corporate governance, communication and marketing

- Contribute to the development and implementation of effective and efficient programme/project planning and management systems.
- Contribute to the development and implementation of effective and efficient programme/project monitoring and evaluation systems.
- Contribute to the development and implementation of effective and efficient programme/project internal financial and asset audit systems.

- Contribute to the development and operationalization of effective programme/project communication and marketing products and services.
- Contribute to the development, implementation and continuous updating of programme/project corporate communication and marketing information systems.

Annex 5.1: Summary of some of the policies that impact on the agricultural sector development

(i) **Agriculture sector policy:** The Ministry of Agriculture, Forestry and Food Security (MAFFS) is directly responsible for agricultural development. The Mission of MAFFS is to improve agricultural production and productivity in order to achieve food security by providing the enabling environment for farmers and other agriculture-related workers and promoting appropriate research, extension input delivery and marketing systems, thereby improving rural incomes, reducing poverty and protecting the natural resources. The agriculture sector policy, therefore, recognizes that (i) growth in agriculture is central to government's poverty reduction strategies; and (ii) growth in agriculture requires improvement in the entire value chain of production, processing and marketing.

(ii) **Decentralization Policy:** The main aim of this reform programme is to focus the role of Government in the national economy to regulatory and social functions that should constitute its primary purpose and core competence. In line with this, the Government has introduced the decentralization policy whose major objective is to build democratic governance structures at district-level responsible for the management of local level development planning and implementation. This particular policy dimension will strongly influence the arrangements for the progressive implementation of programmes.

(iii) **Land tenure Policy:** This Policy aims at promoting efficient, diversified and sustainable use of land-based resources both for agriculture and other uses in order to avoid sectoral land use conflicts and ensure sustainable socioeconomic development. The policy is strongly supportive of full involvement of the private sector, non-governmental organizations, community based organizations and local communities in the sustainable utilization of the country's land resource base. It calls for concerted efforts by all sectors by recognizing the need for an integrated approach in land use management.

(iv) **Crop Production Policy:** Efficient and sustainable crop production is a major component of the Government's food security policy. The Government's strategies and plans for both food and cash crops, involve increasing the productivity of labour; increasing yields by use of improved varieties under appropriate crop and soil management practices; involving agroforestry; expanding the area under cultivation in sustainable ecologies; diversifying production by promoting the cultivation of new or under-exploited crops; rehabilitation and establishment of new plantations; development of medium- and large-scale commercial agriculture involving food crops; and production of industrial raw materials. The policy anticipates that agriculture will be used as a platform for building technology pyramids that add value to basic agricultural products.

(v) **Input Supply Policy:** The National Seed Policy provides guidelines for the operation of various stakeholders in the seeds sub sector. The Government will encourage the development of appropriate institutions for the production of foundation seeds/planting materials of improved crop varieties. The subsequent multiplication of seeds will be undertaken by contract growers and other private commercial seed producers in accordance with the National Seed Policy. The policy stresses the need for intensified crop production which will require the use of appropriate quantities of fertilizers and agro-chemicals in order to exploit the potential of improved crop varieties, and to sustain the momentum of growth in production. Private sector participation in seed supply is seen as critical in this regard.

(vi) **Crop Post-Harvest Technology Policy:** Post-harvest losses are high and have been estimated to average 40%. Post-Harvest losses are especially large for perishable crops including vegetables, fruits, cassava and sweet potato caused by poor handling, transportation and storage. The Crop Post-Harvest Technology Policy aims at enhancing food security by reducing the losses that occur after harvest by adding value to crop produce through improved processing, storage and transportation.

(vii) **Livestock Production Policy:** Livestock in Sierra Leone consists of cattle, sheep, goats, pigs and poultry. Approximately 90% of the cattle are found in Northern Province and are managed by semi-nomadic herders. The country's livestock population was severely depleted during the civil war and, therefore, restocking will receive prominent attention. The general objective of this policy is to achieve self-sufficiency in domestic animals and animal products in which the country has comparative advantage. The Government aims to support capacity strengthening and productivity of livestock farmers through a range of interventions addressing policy, infrastructure, quality control and marketing.

(viii) **Produce Marketing and Pricing Policy:** The objectives of the Government's produce marketing and pricing policy is to promote a free, fair and competitive marketing environment for agricultural commodities. Through the Sierra Leone Export Development and Investment Cooperation (SLEDIC) Act 23 of 1996, the Government provides for the establishment and registration of enterprises by citizens and non-citizens in Sierra Leone. This includes a range of interventions and supporting policies including monitoring of marketing operations, policy research, infrastructure development, development of incentives for exporters, links to sub-regional Regional Economic Community initiatives and the facilitation of entrepreneurs and producer associations.

(ix) **Agricultural Finance/Credit Policy:** Access to credit by small-scale farmers for production and marketing is crucial to facilitate adoption of new technologies required to improve the productivity of the agricultural sector. In Sierra Leone, there are limited commercial banking facilities for agriculture. In much of the country, the only source of credit available to farmers is informal sources with very high rates of interest. The objective of the agricultural finance/credit policy is, therefore, to improve access to adequate and timely investment funds for agricultural development.

(x) **National Environmental Action Plan:** A key policy in the management of natural resources and the environment is the National Environmental Action Programme (NEAP). This action plan promotes the mitigation of equitable natural resource utilization to sustainable environmental management. The NEAP supports complex institutional arrangements in which one of its goals is to promote cooperation amongst government agencies, relevant international and regional organizations, local communities, non-governmental organizations and the private sector in the management and protection of the environment.

(xi) **Water Policy:** The overall water policy goal is to ensure that all citizens in Sierra Leone have convenient access, at affordable cost to water resources in sufficient quantities and acceptable qualities. A key strategy for proper water management recognizes the strengthening of relevant institutions to coordinate and provide strategic direction for all sectors that affect the water environment. The country does not have a separate irrigation policy to support irrigation development nor does it have any comprehensive water resources development policy or strategy.

(xii) **Forestry Policy:** The draft forestry policy, which includes wildlife, aims at supporting the Government's goal of poverty alleviation through a more equitable sharing of the country's forest resources and emphasizes on self-reliance for meeting requirements for forest products through on-farm planting. The policy promotes cross-sectoral collaboration involving central and local government institutions, the private sector, community based organizations and individuals in the management of forest resources. With regard to wildlife management, the policy outlines the main goal as the conservation and management of protected areas and wildlife and to provide for their sustainable resource use through equitable access to, and fair sharing of benefits to present and future generations.

(xiii) **National Trade Policy:** This policy aims at enhancing regional and international trade through use of various instruments for the management and promotion of trade in Sierra Leone. Key features of the *Income Tax Act* and the *Tariff Regime* with relevance to agriculture issues relate to import duty on various products and raw materials and income tax for commercial producers. The most significant effect of the tax regime is the excise tax on imported fuel which affects the costs of all inputs as well as marketing and processing costs.

(xiv) **Rural Infrastructure Policy:** Rural infrastructure consists of rural roads, markets, electricity, telecommunications, irrigation systems, water supply, health and educational facilities. The rural infrastructure has a critical role in the successful development and implementation of an agricultural development policy. The construction of rural roads has been shown to be associated with increase in agricultural production, better use of agricultural credit, increase in land values, and proliferation of small enterprises and expansion of rural markets. The overall objective of rural infrastructure policy relevant to agricultural sector development is increase of the coverage and effectiveness of the agricultural support services; provision of critical mass of basic economic infrastructure at community level; and creation of an infrastructural base which will attract investment to rural areas.

Annex 6.1: SLARI research scientist's level of training and required long-term training by centres

Name of research scientist	Current age	Discipline/Area of specialization	Highest qualification and date acquired	Required further long-term training
1.0 Njala Agricultural Research Centre				
1.1 Sahr N. Fomba	64	Mycology/plant pathology	PhD (1987)	None
1.2 Ernest G. Kamara	64	Seed technology	MSc (2010)	PhD
1.3 Daniel S. Fornah	59	Agricultural extension	MSc (1984)	PhD
1.4 Moses Tucker	57	Agronomy	MSc (1984)	None
1.5 Abdul R. Tarawali	55	Plant Breeding	MSc (1986)	PhD
1.6 Moses T. Moseray	51	Plant Breeding	MSc (1996)	PhD
1.7 Susan A. Roberts (Mrs)	46	Soil science	PhD (2008)	None
1.8 Micheal T. Benya	46	Farm Management	MSc (2004)	PhD
1.9 Lansana Sesay	43	Agricultural extension	MSc (2011)	PhD
1.10 David D. Quee	42	Weed Science	MSc (2009)	PhD
1.11 Augustine Mansaray	40	Entomology	MSc (2005)	PhD
1.12 Festus B. Masaquoi	39	Cassava Breeding	MPhil)	None
1.13 Alhaji Massaquoi	39	Crop science	MSc (2008)	PhD
1.14 Nyahabeh M. Anthony	37	Plant Breeding	MSc (2010)	MPhil (on training)
1.15 Alusiane Samura	37	Plant pathology	MPhil (2006)	PhD (on training)
1.16 Fatmata B. Samura	35	Human Resource Management	MSc (2011)	None
1.17 Prince E. Norman	34	Yam Breeding	MSc (2011)	PhD
1.18 Aloysuis A. Beah	33	Soil science	MSc (2009)	PhD
1.19 Jebbeh A. Samba (Mrs)	32	Plant Breeding	MSc (2011)	PhD
1.20 Sulaiman Sowe	32	Post-harvest technology	MSc (2009)	PhD
1.21 Janatu V Sesay (Ms)	30	Tissue Culture	MSc (2011)	PhD
1.22 Kumba Y. Karim (Ms)	29	Plant Breeding	MSc (2008)	PhD
1.23 Federick Kobba	31	Economist	MSc (2011)	PhD
1.24 Nyahamia Lahai	28	Sociologist	MSc (2011)	PhD
2.0 Rokupr Agricultural Research Centre				
2.1 Charles A. Dixon	63	Soil science/chemistry/fertility	MSc Agric Sc (1981)	None

Name of research scientist	Current age	Discipline/Area of specialization	Highest qualification and date acquired	Required further long-term training
2.2 Sydney D. Johnson	62	Crop physiology/agronomy	PhD (1987)	None
2.3 Alpha Bella Jalloh	56	Plant Breeding	MSc (2004)	PhD
2.4 Henery M. S. Karbo	55	Agric Extension	MPhil (2007)	PhD
2.5 Alah Steven Ngayah	55	Breeding/crop science	MSc (2003)	PhD
2.6 Dr. Denins R. Taylor	55	Plant pathology	PhD (2001)	None
2.7 Dr. Samuel S. Harding	53	Weed scientist	MPhil	PhD
2.8 Dr. Idriss Baggie	52	Soil fertility	PhD (2005)	None
2.9 David Kamara	47	Crop science (soils)	MSc (2008)	PhD
2.10 Finda Jenkins	41	Social scientist (sociology)	MSc Double Masters	PhD
2.11 Foday Syumah	36	Soil fertility management	MSc (2008)	PhD
2.12 Nazir Mohammed	34	Agricultural Economics	MSc (2005)	PhD
2.13 Juliana m. Vangahun	34	Plant Breeding/crop science	BSc (??)	MSc
2.14 Abdulai Bangura	32	Agricultural Engineering	BSc (2008)	MSc
2.15 Kremoh Bangura	25	Agricultural Engineering	BSc (2005)	MSc
2.16 Charles Katingu	??	Entomology	MSc	PhD
3.0 Kabala Horticultural Crops Research Centre				
3.1 Sylvester Rogers	56	Legumes and vegetables	Certificate in Agriculture	BSc/MSc
3.2 Victoria is Associate Scientist				
3.3 J. D. Jeff Momoh	50	Monitoring and evaluation	MPhil (2006)	PhD
4.0 Teko Livestock Research Centre				
4.1 Dr. Samauel F. Carew	65	Livestock Research	DVM, MSc	None because of age
4.2 Mohammed L Barrie nil	56	Vet Med, Research	DVM, MSc	None because of age
4.3 Sorie I Mohammed Kamara	51	Animal Production Scientist	MSc	None because of age
4.4 Saidi Kanu	42	Animal Production and Health	PhD	None
4.5 Dr Amadu T. Jalloh	43	Animal Health Scientist	DVM, MVSc, PhD	None
4.6 Dr John E. D. Terry	60	Animal Health Scientist	DVM, MVSc.	None

Name of research scientist	Current age	Discipline/Area of specialization	Highest qualification and date acquired	Required further long-term training
5.0 Freetown Fisheries Research Centre				
5.1 A. B. C. Jones	62	Research Fellow, Fisheries	MSc	None, because of age limit
5.2 Kadijatou Jalloh	50	Research Fellow, Fisheries	MSc	None, because of age limit
6.0 Kenema Forestry and Tree Crops Research Centre				
6.1 Dr. John Moses Kallon	63	Agronomy	PhD (2001)	On training
6.2 Mohamed Mambu Luseni	35	Plant pathology	MSc (2008)	PhD
6.3 Edward Amara	35	Plant Breeding	MSc (2011)	PhD
6.4 Momoh Kobba	34	Agronomy	MSc (2011)	PhD
6.5 Henry M Kamara	33	Agronomy	MSc (2007)	PhD
6.6 Momodu Jalloh	27	Entomology	MSc (2008)	PhD
6.7 Lamin S Nabieu	26	Plant Breeding	MSc (2008)	PhD
7.0 Magbosi Land and Water Research Centre				
7.1 Mohammed Kande	62	Soil management	MSc	None because of age
7.2 A. E. Chinsman-Williams	26	Soil and water analysis	MSc	PhD
7.3 Maliek Koroma	30	Soil and water analysis	Awaiting MSc result	PhD
7.4 Alimamy Kamara	32	Environmental Science	Awaiting MSc result	PhD
7.5 Lamin Mansaray	30	Agro-meteorology	Awaiting MSc result	PhD
8.0 SLARI Headquarters				
8.1 Dr Alfred G. O. Dixon	57	Breeding	PhD	None
8.2 Prof. Edward R. Rhodes	62	Soils Chemistry	PhD	None Retired 31/12/2011
8.3 Dr Matthew L. S. Gboku	55	Extension & Sociology	PhD	None
8.4 John Jeff Momoh	51	Extension & Sociology	MSc	PhD
8.5 Tamba Bandabla	37	Biometrician	MSc	PhD