Livestock sector training needs assessment report for the CORAF/WECARD region
LIVESTOCK SECTOR TRAINING NEEDS ASSESSMENT REPORT FOR THE CORAF/WECARD REGION

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August 2007
Zones and countries of the CORAF/WECARD Region

Sahelian Zone: Burkina Faso, Cape Verde, the Gambia, Mauritania, Mali, Niger and Senegal

West Central Zone: Benin, Côte d’Ivoire, Ghana, Guinea, Guinea Bissau, Sierra Leone, Nigeria and Togo

Central African Zone: Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo and Gabon

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Acronyms

ANAFE  African Network for Agriculture, Agro-forestry and Natural Resources Education
ARI  Animal Research Institute
AZEPAS  Association des zootechniciens pour l’essor des productions animales au Sénégal
CAADP  Comprehensive African Agricultural Development Programme
CIRAD  Centre de coopération internationale en recherche agronomique
CIRDES  Centre internationale de recherche-développement sur l’élevage
CORAF  Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles
CSIR-INSTI  Council for Scientific and Industrial Research-Institute of Scientific and Technological Information-Ghana
DFID  Department for International Development
EISMV  École inter-États des sciences et médecine vétérinaires
FARA  Forum for Agricultural Research in Africa
FAO  Food and Agriculture Organisation of the United Nations
GIMPA  Ghana Institute of Management and Public Administration
GRN/INSAH  Institut du Sahel
GSM  Global System for Mobile Communication
ICLARM  International Center for Living Aquatic Resource Management
ICRAF  World Agroforestry Centre
ICRISAT  International Crops Research Institute for the Semi-Arid Tropics
ICT  Information and Communication Technology
IITA  International Institute of Tropical Agriculture
ILCA  International Livestock Centre for Africa
ILRI  International Livestock Research Institute
ISNAR  International Service for National Agricultural Research
ITC  International Trypanotolerant Centre
L&CS  Learning and capacity strengthening strategy
MDGs  Millennium Development Goals
MOFA  Ministry of Food and Agriculture, Ghana
NARI  National Agricultural Research Institute
NARS  National Agricultural Research System
NEPAD  New Partnership for Africa’s Development
RUFORUM  Regional Universities Forum for Capacity Building in Agriculture
SCARDA  Strengthening Capacities for Agricultural Research and Development in Africa
UN  United Nations
WECARD  West and Central African Council for Agricultural Research and Development
Preface

The recent World Development Report concluded that in the 21st Century, for the agriculture-based countries, agriculture continues to be a fundamental instrument for Sustainable Development (World Development Report 2008). The lack of capacity has been a major limiting factor in a wide range of development programs and initiatives that have failed in the past.

Research-based capacity building is a core priority of ILRI because of the important role that research plays in economic growth and development as well as in addressing the rapid changes in bio-physical, socio-cultural, technological and the policy environments of the agricultural innovation systems in the developing as well as the developed world.

An effective innovation system in the livestock sector requires a cadre of professionals with a specific skill mix. The new paradigms and the ongoing transformation processes within the agricultural research and development system require a changed behaviour of the change agents. To be relevant any capacity strengthening activity should be geared towards some specific outcomes. These outcomes are tied to skills and performance levels of the various actors in the innovation system. Capacity strengthening therefore should contribute to the overall performance of individuals, organizations and the society at large and should support the strategic directions of agricultural research for development and the broader developmental goals.

As a development input, capacity strengthening is a dynamic phenomenon that must be always present, but should truly reflect the changing conditions and ongoing transformations. To make the capacity strengthening activities of ILRI more relevant in addressing the needs of the livestock innovation system, the capacity strengthening unit of ILRI, in collaboration with our partners, embarked on this training needs assessment study in 2007. The overall purpose is to identify common priorities across countries for collective action.

This task would not have been possible without the support and commitment of a number of individuals. We would like to appreciate and acknowledge the contributions made by Drs Chris Amedo, S Kofi Debrah and WS Al Hassan in conducting this study and preparing this report. All organizations and individuals who responded to the survey questionnaire are recognized for spending their valuable time and for making significant contributions towards the success of this study. The support and continuous encouragement provided by ILRI senior management is also gratefully acknowledged and appreciated.

We recognize that the regional priorities identified in this document need to be complemented with focused national and sub-regional activities. It is our sincere hope that the findings of this study will pave the way for developing and implementing the livestock-related capacity strengthening activities in CORAF/WECAD region. We will make every effort to support the national and regional initiatives in implementing these priorities.

P Anandajayasekeram      Bruce Scott
Manager, Capacity Strengthening Unit    Director, Partnership and Communication
ILRI                        ILRI
Author’s note

In a rapidly changing environment, it is necessary to evaluate from time to time the adequacy of our existing skills to cope with new realities. The International Livestock Research Institute (ILRI) is no exception, and has taken the lead, through this study, to engage in a broad-based stakeholder consultation to fill any existing skill gaps in the CORAF region. Over a short period of 20 days, a diversity of stakeholders were contacted in the region to help identify the issues and recommendations that were made to ILRI for its long-term learning and capacity strengthening strategy.

Chris Amedo
Acknowledgments

This study draws on several sources including a review of literature and a survey of different categories of stakeholders in the livestock value chain. We are most grateful to Professor Walter Alhassan of FARA for sharing his rich experience and for directing us to several sources of information, including the FARA strategic plan. We are similarly indebted to Dr Marcel Nwalozie, Scientific Director of CORAF for sharing his experience and for making available the CORAF strategic plan. The research assistance provided by Mrs Linda Tokoli-Okpoti of the Animal Production Directorate of the Ministry of Food and Agriculture is largely acknowledged. We also acknowledge the immense contribution made by Reverend Dr S Amaning Kwarteng of the Animal Science Department of the University of Ghana, Legon, and Dr SK Agyei, Acting Director of Animal Research Institute of Ghana. We thank the numerous respondents of the survey questionnaire from Benin, Burkina Faso, Ghana, Mali, Nigeria, Niger, Senegal and Togo.
Executive summary

In view of the growing importance of livestock in the region, the increasing complexity of the challenges facing stakeholders in the livestock value chain, the International Livestock Research Institute (ILRI) has contracted a consultant to identify learning and capacity strengthening needs on which to base its long-term strategy to increase stakeholder ability to perform its functions better. The study consisted of a review of secondary information and primary data collection from a cross-section of livestock value chain stakeholders in selected countries in the CORAF region. This report describes the context of the study, its objectives, procedure and methodology.

Major conclusions from the study are:

• The biotic, social, market, policy, institutional and economic constraints that impede livestock productivity in the CORAF region can be alleviated through a collaborative effort among the major actors of the livestock value chain to strengthen scientific knowledge and technical capacity for NARS scientists and technicians to face the emerging and complex requirements in the livestock subsector.

• A large research and development capacity gap exists as a result of a long neglect of governments to invest in R&D and its infrastructure in the CORAF region with negative consequences.

• Existing skills have been eroded or destroyed and new or improved skills are needed in several areas, especially in the areas of genetic improvement, quantity and quality of feed, animal health, livestock management, market demand analysis, market information, transportation and livestock transport infrastructure, role and place of community-based animal health workers, conflict resolution, research–extension–farmer-linkage, import and export policies, regulatory and trade policies, advocacy for improved policies, assessment and evaluation of major socio-economic and policy issues affecting production and marketing and their implications for technology adoption, ICT knowledge, negotiating skills, participatory research, infrastructure and equipment for research, planning of research, funding of agricultural research, management of financial resources, adequate staff numbers with adequate training expertise, management of research institutes, management of research programs, human resource management and the need to stem brain drain in the research environment.

• Opportunities are emerging in the livestock subsector, and a new momentum is developing towards the revival of the rural sector as a focus for development. To take full advantage of these, new skills, knowledge and attitudes are needed by all actors of the value chain (from researchers to producers, to processors and even consumers) to move from the current ‘business as usual’ mode of doing things to embrace a business-like mentality along the value chain.

• The universities, national research institutes, the NGO community, private companies and producer associations at the local level, the Forum for Agricultural Research in Africa at the continental level and the CORAF at the subregional level have excellent potential to work with ILRI to fill the learning and capacity strengthening gaps that exist.

From the analysis of survey results and interactions with different categories of stakeholders, we recommend that:

• ILRI expands the learning and capacity strengthening assessment to other countries in the CORAF region (especially Nigeria) to identify gaps and needs of stakeholders. The survey methodology, given the complex nature of the CORAF region (22 countries, 3 international languages and cultures), should allow for scoping visits to selected countries.

• ILRI considers establishing and supporting ‘Centres of Excellence’ among universities and NARIs to serve as direct partners through which interventions will be channeled within the subregion.

• ILRI conducts a two-day ‘stakeholders’ planning meeting’ involving selected universities, R&D institutions and producer/trader associations to determine the nature of training collaboration that can address the issues identified in the study. These issues relate to genetic improvement of livestock, feed quality improvement, livestock management and health and market analysis.

• ILRI should resuscitate the old ILCA training programs and short courses that took place in the 1970s and 1980s. In particular, it should consult the database of previous trainees from the CORAF region and make them ‘local points’ of privileged partners for ILRI’s outreach programs in their countries.
ILRI should consider laying more emphasis in its training on new and ‘soft skills’. The training priority needs of research managers include: strategic planning, convincing proposal writing, scientific writing, livestock related policy analysis, business management skills, ICT use for knowledge transfer, skills in leadership and decision making, negotiation and conflict resolution methods and effective communication. For researchers, the priority needs include monitoring evaluation and impact assessment, interaction of crop–livestock–water, participatory research methods, and technology transfer. For trainers the priority needs include strategic planning, monitoring and evaluation and impact assessment, convincing proposal writing, scientific writing, business management skills, participatory research methods, livestock policy related analysis and technology transfer.

Special effort should be geared towards building capacity in some cases from scratch in the countries emerging from conflict.
1 Introduction

No country in the world has ever attained accelerated economic growth without adequate investments in agriculture. In Africa where agriculture contributes 30–60% of GDP, employs 60–90% of the population, and contributes 25–90% of export earnings, agricultural productivity remains low, and has resulted in frequent intermittent famines, widespread chronic food insecurity which has undermined health, reduced ability to work and worsened poverty (Africa Fertilizer Summit 2006). From the national to the continental level, low agricultural and livestock productivity have resulted in stagnating and worsening economies. Although productivity is low, livestock accounts for about 17% of the gross domestic product in many CORAF countries (CORAF 1998). Livestock trade within the CORAF region has been on the increase with cattle, sheep and goats trade increasing from USD 17 million in 1970 to USD 211 million in 2000 (Okike et al. 2004).

Livestock contributes in many areas to the agricultural and industrial sectors and the economies of West and Central African countries. Livestock contributes to GDP, food security, import substitution, employment and poverty reduction, rural livelihoods, transport and many others (MOFA 2004). In Ghana for example, livestock subsector contributes about 7% to GDP. It also contributes to food security by supplying part of the daily calorie and protein intake essential for nutritional adequacy. The observed trend in developed economies is that as household income increases, the type of food consumed shifts steadily from predominantly vegetable products to animal products (meat and dairy products). The shift improves substantially the nutritional adequacy of households resulting in good health.

Sahelian countries which produce large volumes of livestock generate substantial foreign exchange by exporting huge amounts of livestock, meat and dairy products annually to the coastal countries. Countries like Mali, Burkina Faso, Niger and Mauritania export large volumes of livestock and livestock products to countries like Ghana, Nigeria, Senegal, Côte d’Ivoire, Togo, Benin, Guinea etc.

Livestock also make significant contributions to rural livelihoods including employment and poverty reduction, multiple functions of livestock keeping, livestock and crop farming linkage and rural transportation. Many agricultural households in the CORAF region keep livestock for the purpose of sustaining livelihoods. Keeping livestock plays a major role as a safety net that enables households to get quick incomes to settle urgent financial needs such as buying food and farm inputs, settling hospital bills, school fees, expenses for funerals, marriages among others.

In mixed farming systems, livestock provide manure not only to improve the soil fertility but also the soil structure. It has the potential of curtailing the practice of shifting cultivation which puts a heavy demand on the use of farmlands. Livestock also provides draught power in tilling the soil especially in small-scale farming where it increases the area cultivated by 60% (World Bank 1992). By using draught power in tillage, the country saves foreign exchange through reduced importation of tractors and equipment and also petroleum products.

In many rural communities with poor access roads to market centres, particularly in the northern savannah and Sahel region, rural transportation is mainly by animal drawn carts. Some urban cities like Dakar in Senegal use the horse and donkey as means of carting goods.

In the industrial subsectors with linkage to livestock subsectors, there are the leather industry and meat processing enterprises that provide employment and incomes to the countries. In summary we can say that the multiple roles of livestock in rural livelihoods can be put into six groups. Livestock is kept to enable savings and credit, provide security and reduce vulnerability, accumulate assets and widen asset base, finance planned expenditures, maintain social capital and provide products.

With 70% of the economically active population engaged in agriculture and livestock activities, it is the best basis for spurring development in Africa. Agricultural growth is strongly linked to the wider economy.
(DFID 2005) and estimates from Africa show that every additional USD 1 of farm income leads to a further ‘multiplier’ income of between USD 0.96 in Niger and USD 1.88 in Burkina Faso in the wider economy (Delgado et al. 1998).

There is a new momentum towards an ‘African Revolution’ and a revival of the rural sector as a focus for development. To meet the UN Millennium Development Goals (MDGs) and in line with the Maputo Declaration and the Comprehensive African Agricultural Development Programme (CAADP) of NEPAD, African governments have been tasked to increase the agricultural budget allocation from the current average of 2 to 10% of their national budgets. The R&D institutions including FARA, for example, are re-organizing their modus operandi and are re-tooling themselves to ensure that new varieties and technologies become easily available to farmers (FARA 2007). New trends such as globalization, trade liberalization, technology and ICT revolution in Africa and genetic engineering all afford new opportunities for increased agricultural growth in Africa. In particular, the GSM association has projected that by 2015, 85% of the population in sub-Saharan Africa will have GSM coverage and that will change the way business is currently conducted (The Economist 2007). In addition, urbanization, rising incomes and dietary transitions are changing consumer tastes and preferences, and dictating how food should be produced, packaged and marketed. In particular, the demand for foods of animal origin is increasing and likely to continue to do so in the years to come. Under these circumstances, the scope for livestock to provide immediate cash income will increase. Its integration with crop production offers great possibilities to promote system sustainability through the production of manure for improved soil fertility and reduction of degradation under traditional grazing management practices. In peri-urban areas, dairy, small ruminants, poultry, pig and in some cases fish farming enterprises will become increasingly important activities that will generate employment for the urban youth and women (CORAF 1998).

It is predicted that by 2020 there will be a massive increase in the demand for food of animal origin and that this increase will come from the developing countries due to rising human populations, changes in dietary habits due to increasing urbanization and increase in incomes (ILRI 2000). It has been observed that over the past 10 years (from 2000) developing countries except Africa have increased meat consumption by about 50%, most of this increase being from Asia. From Africa, the consumption is either static or declining. There is the need to build the needed capacity for Africa to take advantage of the accelerated demand in livestock products, dubbed the livestock revolution. Various learning and capacity building skills will need to be imparted to researchers, extensionists and livestock farmers in Africa.

1.1 Background to the study

The International Livestock Research Institute (ILRI) is one of the 15 future harvest centres, which conduct food and environmental research to help alleviate poverty and increase food security while protecting the natural resource base. ILRI works at the crossroads of livestock and poverty, by bringing high quality science and capacity building to bear on poverty reduction and sustainable development. As part of the research-based outreach and capacity strengthening, ILRI offers opportunities for long- and short-term training for research and development practitioners within the agricultural innovation system, and value chains focusing on livestock related issues. It has a Capacity Strengthening Unit designed to build and strengthen the scientific knowledge and technical capacity for NARS scientists and technicians in developing countries.

In view of the growing importance of livestock in the region, the increasing complexity of the challenges facing livestock producers, traders, support services and researchers in the livestock subsector, it has become necessary to periodically review current capacity, strengthen them where they are eroded or destroyed and/or build new ones required for stakeholders to perform their core functions better and to face new challenges. ILRI contracted a needs assessment study covering the West Africa (CORAF Region), Eastern and Central Africa (ASARECA Region), Southern Africa (SADC Region), South Asia and Southeast
Asia. This study is conducted specifically in the CORAF region and will complement similar studies from the other regions.

1.2 Purpose and objectives

The purpose of the needs assessment consultancy is to identify the priority learning and capacity strengthening activities to be facilitated and/or undertaken by ILRI in its long-term learning and capacity strengthening (L&CS) strategy. The objectives are to identify the learning and capacity strengthening needs of the livestock production system of the subregion that specifically addresses the needs of individuals, groups, organizations (research, education and civil society) and the society at large. In addition the consultancy seeks to address the alternative suppliers of such activities, potential key partners as well as the priorities for ILRI (justification for the priorities).

The specific terms of reference for the consultancy is to:

- Collect and synthesize all available relevant secondary information related to the study
- Collect the relevant primary data needed to complete the assignment
- Using the primary and secondary information collected, prepare a draft report on the ‘learning and capacity strengthening needs of the subregion’. This report should also identify the alternative suppliers, strategic partners, as well as the priorities for ILRI.

1.3 Procedure/methodology

This consultancy is limited to the CORAF region consisting of 21 countries and subdivided into 3 distinct recommendation domains.

Sahelian Zone: Burkina Faso, Cape Verde, the Gambia, Mauritania, Mali, Niger and Senegal

West Central Zone: Benin, Côte d’Ivoire, Ghana, Guinea, Guinea Bissau, Sierra Leone, Nigeria and Togo

Central African Zone: Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo and Gabon (Figure 1).

![Figure 1. The CORAF region and countries.](image-url)
The methodology consisted of literature review to obtain data from secondary sources and primary data collection directly from different categories of stakeholders. Secondary data from published or grey literature was obtained directly from institutions or from individual experts in the livestock field. Primary data were gathered through structured questionnaires and through a consultative process that used a structured guideline of issues related to capacity building, defined for this purpose as ‘the process by which individuals, groups, organizations and societies increase their ability to: perform core functions, solve problems, define and achieve objectives and understand and deal with their development in a broader context and sustainable manner’.

With only 20 total days allocated for the consultancy, a two-pronged approach was adopted. The first consisted of consulting with highly influential and highly placed individuals with expertise in livestock research and development to serve as sources of information and to direct the consultant to other relevant secondary sources and contact persons. With this guidance, a list of individuals from research, development organizations, private companies, regional R&D organizations, farmer and livestock organizations was drawn. The second approach consisted of designing questionnaires in English and French and sent electronically to collect data, followed by telephone interviews to interact more with the respondents. A total of 67 informants in 8 countries spanning the different categories of stakeholders provided information. They include Benin, Burkina Faso, Ghana, Mali, Nigeria, Niger, Senegal and Togo. Burkina Faso, Mali and Niger represent Sahelian land-locked countries with high livestock production capability, while Benin, Ghana and Togo represent coastal livestock consuming countries. Senegal and Nigeria both produce and consume large amounts of livestock. The breakdown is provided in Table 1.

Table 1. Breakdown of persons interviewed by country and category

<table>
<thead>
<tr>
<th>Category of respondents</th>
<th>Burkina</th>
<th>Benin</th>
<th>Mali</th>
<th>Ghana</th>
<th>Senegal</th>
<th>Nigeria</th>
<th>Togo</th>
<th>Niger</th>
</tr>
</thead>
<tbody>
<tr>
<td>NARS (Researchers, research managers and trainers)</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development organizations (NGOs, private consulting companies, international organizations, other relevant government departments)</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private companies (input suppliers, processors and retailers)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subregional R&amp;D organizations</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmer and livestock organizations</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>26</td>
<td>10</td>
<td>11</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

While CORAF provided information as the subregional R&D institute, CSIR-INSTI, EISMV, the animal science departments of the University of Ghana provided information as livestock-related training institutes. The NARS from which data were collected included the Animal Research Institutes, the animal production and veterinary services directorates of the ministries. The development organizations including NGOs such as Heifer International and the private companies included veterinary and animal feed companies and meat processors. Poultry associations, livestock producers and traders associations also provided information as end users of livestock R&D.

1.4 Outline of the report

Key issues and lessons learned from secondary sources, as well as from the survey results are presented in Chapter 2. The discussions include issues related to livestock research and its management, training needs and an analysis of potential partners that ILRI could collaborate with to address the issues in a sustainable manner. Opportunities and capacity building challenges are also addressed. Chapter 3 summarizes the main findings and draws conclusions as well as makes recommendations. The annexes include the profile of potential ILRI partners, list and contacts of selected informants.
2 Results and analysis

2.1 Introduction

This chapter discussed results and make analysis based on survey results and secondary sources. Key issues were identified and the lessons learnt for capacity strengthening in terms of skills, knowledge and attitudes were discussed. The chapter again discusses the TARGET case study project that identified areas of capacity strengthening in smallholder milk production and processing in selected countries in the CORAF region. It again discusses the survey results that touched on key research management issues relating to research managers. Other research management issues discussed included issues on animal production, animal health and policies on animal production and marketing/trade issues. The discussions again centred on research management training needs, additional scientific technical knowledge needs, additional soft skills needed by research managers and trainers, alternative suppliers currently offering such training with which ILRI could collaborate and potential institutions for collaboration (see Table 2). Finally the chapter discusses the opportunities and challenges for learning and capacity strengthening in the region.

Table 2. Soft skills needed by research managers and trainers

<table>
<thead>
<tr>
<th>No</th>
<th>Skill areas</th>
<th>Extremely important (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Convincing proposal writing</td>
<td>93</td>
</tr>
<tr>
<td>2</td>
<td>Participatory research methods</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>Monitoring, evaluation and impact assessment</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>Interaction of crop–livestock water</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>Strategic planning</td>
<td>73</td>
</tr>
<tr>
<td>6</td>
<td>Scientific writing</td>
<td>73</td>
</tr>
<tr>
<td>7</td>
<td>Business management skills</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Human resource development</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Livestock related policy analysis</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Technology transfer</td>
<td></td>
</tr>
</tbody>
</table>

Other suggested topics

2.2 Previous findings on the key issues

Key issues

The key issues related to the livestock sector identified from various sources (principally from CORAF's strategic plan 1999–2014 and MOFA's Livestock Survey document of Ghana 2002) may be grouped into technological, market, institutional and policy issues. After listing the key issues, the lessons learned for capacity strengthening in terms of skills, knowledge and attitudes are discussed.

The technological and R&D issues which need to be addressed to increase livestock productivity include:

- Genetic improvement, with attention to:
  - improvement of indigenous breeds including:
  - gene pool conservation
- Quantity and quality of feed, with particular attention to:
  - feed resource base improvement
  - feeding strategies
  - information on supplementation for ‘new sources/users’
- Animal health
- Management, with attention to:
  - improved animal handling, processing and packaging
• manure management for nutrients/environment
• resource management and
• access/mobility/water and grazing

Markets issues which need to be addressed to increase livestock productivity include:

• Market demand analysis with attention to:
  • food safety and consumer preferences
  • new market opportunities for meat and diversified meat products
  • product (standards-quality) and input, markets
  • grading (of body condition) to get premium prices

• Market information with attention to:
  • real time information and market intelligence for producers and traders
  • collective action, horizontal and vertical integration along the value chain

• Transportation and livestock transport infrastructure

Institutional issues which need to be addressed to increase livestock productivity include:

• The role and place of community-based animal health workers are unclear
• Local institutions and capacity for conflict resolution between herders and farmers
• Inadequate mechanisms for paying for feed and water
• Better understanding the objectives of livestock keepers’ needs
• Poor research–extension–farmer linkages and technology transfer

Policy issues which need to be addressed to increase livestock productivity include:

• Import and export policies do not make livestock production competitive
• Regulatory and trade policies are not favourable for intra-regional trade
• Advocacy for improved policies and infrastructure
• Assessment and evaluation of major socio-economic and policy issues affecting production and marketing and their implications for technology adoption.

Lessons learned

A number of lessons were learned from the identified issues:

Research capacity existing in the NARS has eroded due to several factors including low motivation of researchers and poorly funded research and extension structure. As a result, researchers no longer have the critical mass necessary to study and understand livestock keepers’ priorities and objectives so as to develop technologies that are appropriate and sustainable.

It is important to strengthen capacities to understand farmers’ objectives within the context of the livestock keeping system so as to strengthen the knowledge, skills and attitudes of farmers and to formulate policies that would reduce constraints and enhance productivity.

It is also important that livestock keepers and operators and their associations be involved in research agenda formulation, priority setting and extension activities. Also, greater emphasis should be put on extension of livestock technology transfer by the various stakeholders.

There should also be the establishment and reinforcement of research–extension–farmer linkage committees to ensure full participation of all stakeholders in technology development, transfer and adoption.

Another important lesson learned is that the nutritive value of feed is adequate only for a short period of the year leaving the animals with very poor quality feed for most part of the year.

There is the need therefore to explore alternative feed sources such as utilization of agro-industrial by-products and harnessing of domestic by-products (domestic waste). Also incorporating recommended
forage and legume species into crop farming can be investigated. Developing technologies such as over sowing with tree legumes that would improve range management.

It is also established that the livestock market in the CORAF region is poorly integrated. Stakeholders lack information necessary to acquire inputs such as veterinary drugs, animal feed or breed stock, and lack price information as well as business opportunities. They normally depend on friends and informal channels to sell their animals or animal products.

It is important to help stakeholders acquire new skills to be able to use ICT (internet, cellular telephones etc.) to be able to access real time market information and opportunities and for increasing business linkages between farmers and buyers.

The institutional and policy issues such as regulatory and trade policies are not conducive to competitive production of livestock, and farmer organizations are not strong enough to lobby and advocate for improved policies.

It is therefore important to strengthen the organizational, analytical and advocacy capacities of producer and trader associations to change their attitudes and particularly to advocate for better policies.

In 2002–04, a multi-country project involving Ghana, Niger and Nigeria known as the Technology Applications for Rural Growth and Economic Transformation (TARGET) was initiated to strengthen capacity in smallholder milk production and processing in these countries (Alhassan 2004). The project offers lessons that could help the implementation of the ILRI Learning and Capacity Strengthening strategy.

An initial scoping study identified the need for farmer training in the feeding, management, health care of milking cows and the sanitary processing of milk. The research team on the project trained the farmers in these areas as well as the extension staff to enable follow-up support to the livestock farmers. Alongside the training received was the delivery of the inputs to farmers to facilitate the application of training acquired. The outcome of these capacity building initiatives in the case of Ghana was the increase in milk production of herds, milk off-take and farmer well-being. Participating countries in the TARGET project, namely, Niger and Nigeria recorded similar positive outcomes of capacity identification and strengthening at farmer level.

Recently, FARA has identified the need to assist African countries through the subregional research organizations (SROs) to develop the needed capacity in various areas of research management and execution. FARA has introduced a special program, the Strengthening Capacities for Agricultural Research and Development in Africa (SCARDA) as one of its five networking support functions for agricultural research in Africa.

Following studies conducted by FARA on the requirements for efficient, effective and productive national agricultural research systems, the following areas of capacity strengthening were identified:

- agricultural research and management
- scientific capacity and management
- financial capacity and management
- collaboration capacities.

The scoping study report dealt with capacity strengthening in agricultural research in general and not specifically on livestock. Nevertheless, the report should greatly inform the ILRI Learning and Capacity Strengthening strategy.

**Summary findings of the scoping study**

1. Infrastructure and equipment for research
Generally only few countries have adequate infrastructure and functional laboratories for research. Infrastructure is poorly maintained. Laboratories are barely functional—electricity, water, internet services etc. are poor.

2. Planning of research

Four categories of countries were identified as follows:

- Countries with operational strategic agricultural research plans being implemented
- Countries with strategic research plans but cannot implement due to funding constraints
- Countries with developed strategic plans but not validated by their governments. Thus the plans are not being implemented
- Countries with no strategic plans but have recognized the need for them.

3. Funding agricultural research

Countries are at different levels here. The World Bank provided most support in the 1980s and 1990s. Financial support to research still depends on donors. Governments agreed in Maputo to earmark 10% of national budget to agricultural research.

4. Management of financial resources

This is variable. It depends on donor type. Donors may have different reporting requirements.

5. Inadequate staff numbers and with inadequate training expertise

There is the need to modernize the financial management of the NARIs.

6. Management of research institutes

This is variable from country to country. In some countries, research coordination is by a National Council of Agricultural Research (e.g. Ghana has CSIR, Nigeria has recently introduced the Agricultural Research Council of Nigeria (ARCN), Senegal has the National System of Agro-Sylvo and Pastoral Research). This system ensures coordination and creates synergies. All countries want this coordination system in place. Specific management training to high level managers is required to improve efficiency of management.

7. Managing research programs

This may be by a director at the institute level. Usually directors are academics with no management experience. They need human resources and logistics (computers, advanced software, means of communication) to facilitate management. Mechanism should be in place to facilitate monitoring and evaluation of research programs. Countries in the subregion require expertise in research management. Training of directors and senior scientists in M&E and impact assessment of agricultural research is necessary.

8. Human resources management

There is the need for training of persons in this area but such experts may not have clear cut line of progression in a purely research establishment and so may resign eventually. Where a scientist is assigned the task, a reduction in scientific manpower occurs. SCARDA is to support professional training of NARS personnel in HRM and financial management.

9. Research environment

There is the need to stem brain drain and encourage the return of trained scientists. There is the need to improve working conditions. The research infrastructure must be improved.

The grouping of the capacity strengthening topics and their frequency of occurrence by country are presented in Table 3. These include specific topics related to livestock and cross-cutting issues identified by specific countries in terms of capacity strengthening. Livestock specificities include livestock breeding. The cross-cutting issues include tools needed for research work e.g. biometry and data management,
experimental design, proposal writing, molecular biology, biotechnology, agricultural research management, management of agricultural information and communication, monitoring and evaluation and impact assessment. Emerging topics include intellectual property rights management, biodiversity, institutional change management and climate change in agriculture.

Table 3. Grouping of capacity strengthening topics identified by NARS

<table>
<thead>
<tr>
<th>i. Commonalities: themes identified by all countries</th>
<th>ii. Specificities: topics identified by specific countries</th>
<th>iii. Emerging topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tools for research</td>
<td>Biotechnology</td>
<td>Intellectual property rights management</td>
</tr>
<tr>
<td>Biometry and data management</td>
<td>Molecular biology</td>
<td>Biodiversity</td>
</tr>
<tr>
<td>Experimental design</td>
<td>Integrated pest management</td>
<td>Institutional change management</td>
</tr>
<tr>
<td>Proposal writing</td>
<td>Socio-anthropology</td>
<td>Climate change in agriculture</td>
</tr>
<tr>
<td>Self-teaching (e-learning) skills</td>
<td>Socio-economics</td>
<td></td>
</tr>
<tr>
<td>Scientific writing relevant to audience</td>
<td>Systemic Agronomy</td>
<td></td>
</tr>
<tr>
<td>Facilitation of technical networks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Agricultural research management</td>
<td>Research program formulation, planning and implementation</td>
<td></td>
</tr>
<tr>
<td>Research program/Project management</td>
<td>Fisheries management and aquaculture</td>
<td></td>
</tr>
<tr>
<td>Financial sustainability and management</td>
<td>Soil physics</td>
<td></td>
</tr>
<tr>
<td>Human resources management</td>
<td>Soils and fertility management</td>
<td></td>
</tr>
<tr>
<td>3. Management of agricultural information and communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management of agricultural documentation centres and information networks</td>
<td>Innovations systems for IAR4D</td>
<td></td>
</tr>
<tr>
<td>Communication of agricultural research</td>
<td>GIS and remote sensing</td>
<td></td>
</tr>
<tr>
<td>4. Monitoring, evaluation and impact assessment</td>
<td>Germplasm introduction and improvement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plant breeding—development of quality seeds and planting materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural research policy formulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Livestock breeding, nutrition and management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-harvest technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value addition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agricultural economics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marketing and rural economy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Computer science</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Animal health</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Languages (English/French)</td>
<td></td>
</tr>
</tbody>
</table>


Table 4 indicates the frequency distribution of scientific capacity strengthening topics identified by CORAF/WECARD countries. Here again livestock specific topics include socio-anthropology, veterinary science, and livestock breeding nutrition and management. Cross-cutting topics include natural resources management, GIS and remote sensing, and molecular biology among others.
Table 4. *Frequency distribution of scientific capacity strengthening topics identified by CORAF/WECARD countries*

<table>
<thead>
<tr>
<th>Topics</th>
<th>Number of countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drip irrigation</td>
<td>2</td>
</tr>
<tr>
<td>2. Farming systems</td>
<td>2</td>
</tr>
<tr>
<td>3. Natural resources management</td>
<td>2</td>
</tr>
<tr>
<td>4. GIS and remote sensing</td>
<td>2</td>
</tr>
<tr>
<td>5. Molecular biology</td>
<td>3</td>
</tr>
<tr>
<td>6. Socio anthropology</td>
<td>3</td>
</tr>
<tr>
<td>7. Systematic agronomy</td>
<td>3</td>
</tr>
<tr>
<td>8. Environmental science</td>
<td>3</td>
</tr>
<tr>
<td>9. Climate change</td>
<td>3</td>
</tr>
<tr>
<td>10. Innovations systems for IAR4D</td>
<td>5</td>
</tr>
<tr>
<td>11. Market and rural economy</td>
<td>5</td>
</tr>
<tr>
<td>12. Veterinary science</td>
<td>6</td>
</tr>
<tr>
<td>13. Small scale mechanization</td>
<td>6</td>
</tr>
<tr>
<td>14. Quality control of agricultural produce</td>
<td>6</td>
</tr>
<tr>
<td>15. Water and irrigation management</td>
<td>8</td>
</tr>
<tr>
<td>16. Fisheries management and aquaculture</td>
<td>8</td>
</tr>
<tr>
<td>17. Research program planning and formulation</td>
<td>8</td>
</tr>
<tr>
<td>18. Agricultural research policy formulation</td>
<td>8</td>
</tr>
<tr>
<td>19. Post-harvest technology</td>
<td>8</td>
</tr>
<tr>
<td>20. Germplasm introduction and improvement</td>
<td>9</td>
</tr>
<tr>
<td>21. Value addition</td>
<td>11</td>
</tr>
<tr>
<td>22. Plant breeding-quality seed/planting materials production</td>
<td>11</td>
</tr>
<tr>
<td>23. Biotechnology</td>
<td>12</td>
</tr>
<tr>
<td>24. Agricultural economics</td>
<td>13</td>
</tr>
<tr>
<td>25. Socio economics</td>
<td>14</td>
</tr>
<tr>
<td>26. Soil physics and soil fertility management</td>
<td>14</td>
</tr>
<tr>
<td>27. Livestock breeding nutrition and management</td>
<td>16</td>
</tr>
<tr>
<td>28. Integrated pest management</td>
<td>17</td>
</tr>
<tr>
<td>29. Biometry</td>
<td>22</td>
</tr>
</tbody>
</table>


The categorization of various capacity strengthening activities are listed down in Table 5.

Table 5. *Categories of capacity strengthening activities*

<table>
<thead>
<tr>
<th>Type of capacity building/strengthening</th>
<th>Explanatory notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>University degree training to MSc/MBA, Mphil, PhD level</td>
<td>In-country or external, split or continuous, support may be partial or total. Candidates will be registered in subregional universities; or if necessary to universities outside Africa</td>
</tr>
<tr>
<td>Professional skills training</td>
<td>Formal short courses in specific disciplines for individuals, especially for agricultural research and institutional management</td>
</tr>
<tr>
<td>Group training courses</td>
<td>Participants from one or many institutions or countries—establishing professional networks</td>
</tr>
<tr>
<td>Training workshops</td>
<td>Participatory, pooling of knowledge and experience, targeted at and achieving consensus on specific issues, and formulating follow-up activities to ensure maximum use of skills acquired for agricultural research and development</td>
</tr>
<tr>
<td>Type of capacity building/strengthening</td>
<td>Explanatory notes</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Self-teaching</td>
<td>Through e-learning and other more traditional resources</td>
</tr>
<tr>
<td>Seminars</td>
<td>Institutional, national or regional events on specific issues by someone inside or outside the organization. Benefits audience and speaker</td>
</tr>
<tr>
<td>Attending (or preferably presenting at) conferences</td>
<td>On key relevant aspects of current research for development</td>
</tr>
<tr>
<td>Attachments for professional development</td>
<td>Short-term attachments to centres of excellence or advanced laboratories/institutions at national/regional/international levels</td>
</tr>
<tr>
<td>Technical study tours</td>
<td>Short-term visits to share knowledge and build networks</td>
</tr>
<tr>
<td>Visiting scientists program</td>
<td>Senior scientists, between university and NARIs, or between NARIs and agricultural extension agencies</td>
</tr>
<tr>
<td>Mentoring</td>
<td>Within own institution or outside. Includes an element of succession planning; young researchers are under the tutelage and guidance of experienced and nationally or internationally recognized scientists</td>
</tr>
<tr>
<td>Continuous professional training</td>
<td>Long-term supportive relationships; as follow up of mentoring</td>
</tr>
<tr>
<td>Multidisciplinary collaborations resulting in cross transfer of specializations</td>
<td>Projects that require specialists from different disciplines to help each other results in productive exchange of skills and experiential learning</td>
</tr>
<tr>
<td>Facilitation of joint research programs</td>
<td>Any combination of NARIs, universities, FBOs. Industry, NGO, CBOs, farmers, national, regional international</td>
</tr>
<tr>
<td>Visiting professionals from the Diaspora</td>
<td>National platforms or forums for demand-articulation by industry, researchers and farmers</td>
</tr>
<tr>
<td>Teaching junior staff/schools/extension staff/farmers</td>
<td>Teaching a subject requires drawing on existing knowledge and skills, gap-filling, then organizing these assets for coherent delivery at an appropriate level. A good way to self-teaching</td>
</tr>
<tr>
<td>Writing for popular publications—newspapers, newsletters, radio, television, websites</td>
<td>Requires distillation of scientific research results and presentation at appropriate level</td>
</tr>
<tr>
<td>Secondment for varying periods with extension services</td>
<td>Sharp end experience might help focus research on real needs. Build skills in communicating with farmers</td>
</tr>
<tr>
<td>Role of group leader rotated to all scientific staff in turn</td>
<td>Promotes ability to play different roles and communicate at different levels in the organization</td>
</tr>
<tr>
<td>Team building activities</td>
<td>Simulated problem-solving scenarios—physical and intellectual. Principle of outward bound courses for staff and management training. Bonds teams, breaks down hierarchical barriers, fosters pooling of thoughts</td>
</tr>
</tbody>
</table>


### 2.3 Survey results

The survey results discussed here are organized according to key research management issues and key research issues in areas of animal production, animal health, policy and institutions, marketing and trade issues. It is followed by a discussion of the additional scientific technical knowledge or training that is necessary to address the issues. In view of the changing R&D environment, new ‘soft skills’ are required by all stakeholders in the value chain. Respondents provided responses to their soft skills needs which are summarized in Tables 2 and 6.
### Table 6. Additional soft skills needed by research managers and trainers

<table>
<thead>
<tr>
<th>Skill areas</th>
<th>Extremely important (%)</th>
<th>Moderately important (%)</th>
<th>Not important (%)</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participatory research methods</td>
<td>80</td>
<td>20</td>
<td></td>
<td>To fully engage stakeholders in R&amp;D</td>
</tr>
<tr>
<td>2. Leadership and decision-making</td>
<td>40</td>
<td>60</td>
<td></td>
<td>For policy and trade targeting MDBs, food security and poverty reduction</td>
</tr>
<tr>
<td>3. Strategic planning</td>
<td>73</td>
<td>27</td>
<td></td>
<td>To enhance planning at NARI level</td>
</tr>
<tr>
<td>4. Intellectual property rights policy</td>
<td>27</td>
<td>73</td>
<td></td>
<td>To protect innovators and provide incentives to them</td>
</tr>
<tr>
<td>5. Negotiation and conflict resolution skills</td>
<td>10</td>
<td>47</td>
<td>33</td>
<td>Particular reference to nomadic systems and indiscriminate pasturing</td>
</tr>
<tr>
<td>6. Facilitation skills</td>
<td>40</td>
<td>53</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>7. Design, implementation and assessment of networks and partnerships</td>
<td>40</td>
<td>53</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8. Monitoring, evaluation and impact assessment</td>
<td>80</td>
<td>20</td>
<td>0</td>
<td>To enhance NARS capacities</td>
</tr>
<tr>
<td>9. Planning and priority setting</td>
<td>67</td>
<td>33</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10. Climate change; implications and adaptation strategies</td>
<td>40</td>
<td>53</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>11. Poverty, vulnerability and risk analysis</td>
<td>40</td>
<td>47</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>12. Value chain analysis, market orientations and implications to R&amp;D</td>
<td>40</td>
<td>53</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>13. Innovation systems perspective and implication to R&amp;D</td>
<td>47</td>
<td>33</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>15. Gender analysis</td>
<td>13</td>
<td>67</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>16. Sustainable use of animal genetic resources</td>
<td>67</td>
<td>7</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>17. Gene bank management</td>
<td>46</td>
<td>27</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>18. Convincing proposal writing</td>
<td>93</td>
<td>7</td>
<td></td>
<td>Very crucial</td>
</tr>
<tr>
<td>19. Scientific writing</td>
<td>73</td>
<td>27</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>20. Effective communication</td>
<td>67</td>
<td>33</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>21. Others (please specify)</td>
<td></td>
<td></td>
<td></td>
<td>Business management skills to interact with private sector</td>
</tr>
<tr>
<td>22. Institutional transformation and human resource development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Livestock related policy analysis studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Technology transfer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.3.1 Key research management issues

The research managers that were interviewed at the subregional (CORAF) and national levels identified the major key research management issues as:

- Lack of critical mass and of motivation of researchers resulting in:
  - Low quality research publications and poor scientific writing skills to be addressed by ILRI.
  - Inadequate attention to training in specific areas including breeding, nutrition, poultry production, livestock economics, rural sociology, anthropology, pasture agronomy, range science, animal biotechnology, animal diagnostics, reproductive physiology and artificial insemination; no
particular priorities but the breeding, nutrition, range science, poultry, rural sociology and the emerging sciences of biotechnology should receive priority attention as these directly affect advancements in livestock production.

- Low quality of research proposals for funding—need to beef up training in proposal writing.
- Lack of critical mass and of motivation of technical support staff, resulting in:
  - Poor technology transfer.
  - Inadequate funding for research from governments, resulting in:
    - poor maintenance of research infrastructure
    - poor infrastructure and logistics (obsolete laboratory equipment, lack of resources for the libraries)
  - Lack of proper research coordination between and among NARIs, leading to duplication of efforts.
  - Poor access to livestock information, market opportunities and new developments in the subsector.

It would seem that inadequate funding is at the root of these constraints. A priority activity of ILRI will thus be the building of capacity for good research proposal writing. ILRI should support access to livestock information including market opportunities.

2.3.2 Key research issues

Animal production

Breeding, in particular

- Conservation of gene pools/ Genetic resource conservation and utilization
- Insufficient productive breeds and husbandry practices
- Animal and poultry breeding to improve genetic bases
- Identification and isolation of genes of interest in livestock
- Lack of breeding stock
- Reproduction research to address poor recycling in ruminants and other environmental factors accounting for poor reproductive performance in animals

Feed/feeding

- Animal nutrition studies, especially in semi-arid areas
- Poor quality and inadequate feed resources particularly during the dry season
- Energy and protein supplements for poultry and pig production

Management

- Water availability to livestock
- Pasture and range improvement
- Inadequate and improper housing
- Intensification of integrated systems research e.g. crop–livestock
- Socio-economic aspects of rural production systems
- Technology adoption studies
- Diagnostic skills using modern tools like biotechnology

Animal health

- Research into the efficacy and safety of recombinant DNA vaccines
- Vaccine development against common livestock and poultry diseases (CBPP, PPR, Rinderpest, orf etc.)
- Management, control and prevention of diseases of economic importance in some areas
- Epidemiological studies of some livestock diseases of economic importance in some areas
- Endo and ecto-parasite control
- Lack of control of diarrhea diseases in ruminants
- Studies into ruminant gut flora and its improvement strategies
- Respiratory problems in ruminants
- Resistance of livestock to drugs especially antibiotics, acaricides
- Early diagnosis of avian diseases
- Control of brucellosis
• Further research into swine viral diseases
• Ethno-veterinary medicine research
• Pests and diseases affecting quality, growth and reproductive performance

Policy/institution
• Development of national biotechnology and biosafety policy
• Harmonization of biosafety regulation in the subregion
• Harmonization of processes for priority policies
• No clear-cut government policy on animal research
• Lack of policy on funding of research
• Lack of appropriate policy on training of researchers in the various fields of animal production
• Determining complementarity and institutional arrangements for veterinary and animal husbandry.

Marketing/trade
• Studies in the significance of intra-regional trade of livestock
• Lack of well organized local markets for livestock trade
• Research on market conduct, performance and structure for animal products
• Inadequate market information on livestock availability and objective pricing criteria
• Poor infrastructure at livestock markets
• Poor transportation system for livestock
• Appropriate truck design for hauling livestock to markets
• Harmonize and operationalize framework and procedures for quality control.

Others
• Lack of data collection and management systems
• Remote sensing techniques.

2.4 Training needs and additional skills

2.4.1 Research management training needs

Additional skills and training required to address these issues include the following:
• Skills for research proposal writing and research fund raising to attract and retain research staff
• Communication and advocacy skills to communicate the results of our research and advocate for government investment in research
• Equipment maintenance and operations to maintain and service basic equipment
• Human resource management to motivate and retain staff
• Skills in using appropriate software for data analysis
• Training in molecular biology
• Long-term training for recruited staff at the first degree level

2.4.2 Additional scientific technical knowledge needs

Additional scientific technical knowledge required for addressing these issues includes the following areas:
• Bioinformatics (biometrics, databases etc.)
• Innovative breeding techniques (conventional and transgenic)
• Technology transfer methodologies in animal production
• Quantitative and statistical procedures and use of softwares for data analyses
• Knowledge in marker assisted selection and quantitative trait loci to improve indigenous livestock
• Energy and mineral determination
• Molecular biology techniques
• Biotechnology and genetic engineering
• Biometry design and on-farm data analysis and interpretation
• Feed analysis and least-cost diet formulation using softwares
• Rural livestock socio-economics
• Mathematical/bio-economic modelling of animal production systems.

2.4.3 Additional ‘soft skills’ needed

In view of the changes that have occurred in the agricultural research and development (R&D) in recent times, research managers, trainers and researchers need new ‘soft skills’ to be effective. The survey of research managers indicate that the most needed skills include the following, and the details are presented in Table 6:

• participatory research methods to be able to fully engage stakeholders in research planning and experimentation
• strategic planning methods to enhance planning at the NARS level and to avoid duplication of efforts
• monitoring and evaluation skills to better document the impacts of their research
• writing bankable research and funding proposals and others as indicated in Table 2.

2.5 Alternative supplier in the region

Institutions in the region currently offering such training (alternative suppliers) with which ILRI could collaborate to bridge the training and skills gap include:

• Animal research institutions of the NARIs
• Animal production divisions of the Ministries of Agriculture or Rural Development
• Veterinary service divisions of the Ministries of Agriculture
• Extension service divisions where they are not integrated with the animal production divisions of the Ministries of Food and Agriculture.
• Universities

2.6 Other potential institutions for collaboration

• The SCARDA program of FARA and its implementation at CORAF/WECARD following the completed scoping study on capacity building needs commissioned by the SRO.
• Other FARA support programs like the Dissemination of New Agricultural Technologies in Africa (DONATA) and the Regional Agricultural Information and Learning System (RAILS).
• Training and research programs of subregional research bodies in the livestock area like EISMV, ITC and CIRDES.

A number of on-going capacity strengthening initiatives that present opportunities for collaboration with the ILRI Learning and Capacity Strengthening initiative include the FARA projects (DONATA, RAILS) and the CTA group training courses organized periodically in the subregion.

2.7 Opportunities and challenges for capacity strengthening in the region

Based on the survey results and data from secondary sources, a number of opportunities and capacity building challenges have been identified. These are supported by the results of the SCARDA scoping study undertaken by CORAF/WECARD.

The gap in training needs listed above and the anxiety of research managers and practitioners to address these gaps offer an opportunity for ILRI engagement with the national systems through the relevant subregional organizations. The challenge will be to source the necessary funding support to address the decline in research infrastructure and meet training needs; this is a major challenge. This challenge is further aggravated by the apparent lack of resource commitment by African countries to research, development and training.
3 Key conclusions and recommendations

3.1 Introduction

Chapter 3 summarizes key issues discussed, draws conclusions and makes recommendations for ILRI. The key findings in the report include capacity strengthening needs of the various stakeholders at various levels that have been identified for ILRI to consider. These L&CS needs have been described in the key findings. It has also been observed that major constraints that impede livestock productivity in the CORAF region can be alleviated through a collaborative effort among the major actors of the livestock value chain to strengthen scientific knowledge and technical capacity for NARS scientists and technicians to face the emerging and complex requirements in the livestock subsector. The report also recommends best practices, modalities for capacity strengthening, additional support needed in the L&CS drive of ILRI and various disciplines to be incorporated in the training programs. Finally the report enumerates some limitations to the study.

3.2 Key findings

- Research funding levels are low, and R&D infrastructure has deteriorated or functions poorly. This has led to low motivation of research staff and technicians and an erosion of capacity and a large gap in imparting R&D knowledge to young scientists and technicians.
- Research managers lack the capacity to coordinate research among NARIs in the CORAF region leading to duplication of efforts. The majority lack the ability to write very good research proposals and to source funding for them.
- There is a serious shortage of staff in some key areas including genetic resource conservation and utilization, identification and isolation of genes of interest, pests and diseases affecting quality, growth and reproductive performance, nutrition studies especially in semi-arid areas, pasture and range improvement among others.
- Markets are poorly integrated due to lack of timely information on prices and trading opportunities.
- Capacity strengthening (Training) needs to reinforce existing ones or to build new skills include but not limited to:
  1. participatory research methods to be able to fully engage stakeholders in research planning and experimentation
  2. strategic planning methods to enhance planning at the NARS level and to avoid duplication of efforts
  3. monitoring and evaluation skills to better document the impacts of their research
  4. writing bankable research and funding proposals
  5. skills in leadership and decision making, negotiation and conflict resolution methods, effective communications and business management skills
  6. research proposal writing, equipment maintenance and operation, training in the use of appropriate software for data analyses and training in molecular biology
  7. additional scientific technical knowledge required to address some of these issues as technology transfer methodologies, innovative breeding techniques, quantitative and statistical procedures and use of software for data analyses, biotechnology and genetic engineering
  8. others include participatory research methods, strategic planning, priority setting, monitoring, evaluation and impact assessment and interaction of crop–livestock–water.

3.3 Major conclusions

Most of the biotic, social, market, policy, institutional and economic constraints that impede livestock productivity in the CORAF region can be alleviated through a collaborative effort among the major actors of the livestock value chain to strengthen scientific knowledge and technical capacity for NARS scientists and technicians to face the emerging and complex requirements in the livestock subsector.
A large research and development capacity gap exists as a result of a long neglect of government to invest in R&D and its infrastructure in the CORAF region. This has resulted in low staff morale, lack of motivation, inadequate critical mass, poor research quality of scientists and technicians. Existing skills have eroded or destroyed and new skills are needed in several areas, especially in the areas of ICT knowledge, advocacy and negotiating skills, as well as participatory research.

Opportunities are emerging in the livestock subsector to meet new consumer tastes and preferences. There is a new momentum towards the revival of the rural sector as a focus for development. To take full advantage of these, new skills, knowledge and attitudes are needed by all actors of the value chain (from researchers, to producers, to processors and even consumers) to move from the current ‘business as usual’ mode of doing things to embrace a business-like mentality along the value chain.

Universities, national research institutes, the NGO community, private companies and producer associations at the local level, the Forum for African Agricultural Research at the continental level and the CORAF at the subregional level have excellent potential to work with ILRI to fill the learning and capacity strengthening gaps that exist.

3.4 Recommendations

The TARGET project provides a unique example of a capacity strengthening initiative involving small-scale resource poor livestock producers that the ILRI Learning and Capacity Strengthening strategy could learn from. It provided a training link between scientists, extension agents and livestock farmers. The training with both extensionists and farmers was hands-on. It is the example of a best practice that can be kept alive with ILRI support as a learning model for other countries that can be facilitated to visit the project sites.

The modalities for capacity strengthening or activities to be undertaken to effect the learning and capacity strengthening areas cited in the CORAF/WECARD scoping study that are strongly applicable to the ILRI strategy are professional skills training, training workshops, seminars, attachments for professional development, technical study tours (also identified as a powerful tool in the Ghana ILRI USAID TARGET study cited earlier in this report), multi-disciplinary collaborations and facilitation of joint research programs.

Countries emerging out of conflict like Sierra Leone, Côte d’Ivoire and Liberia and those in conflict like Chad will need additional support in the Learning and Capacity Strengthening drive of ILRI.

All the thematic areas recognized for capacity strengthening in the SCARDA scoping study for CORAF/WECARD, namely, tools for research, agricultural research management, management of agricultural information and communication and monitoring, evaluation and impact assessment identified for SCARDA support are generic and apply with equal emphasis to the Learning and Capacity Strengthening Initiative of ILRI.

The direct information gathered from the scoping study for the ILRI strategy captures strategic planning, monitoring, evaluation and impact assessment, convincing proposal writing and effective communication as the priority capacity strengthening areas identified by countries surveyed.

In the CORAF/WECARD scoping study for the SCARDA intervention, livestock breeding, nutrition and management featured strongly as a priority topic in which survey countries felt the need for capacity strengthening. Most of the other specific topics requiring capacity strengthening were not type of agriculture specific and applied with equal emphasis to crops and livestock. The high placement of livestock breeding, nutrition and management in the CORAF/WECARD scoping study for SCARDA is an opportunity for ILRI collaboration with CORAF/WECARD in the implementation of its learning and capacity strengthening initiative.
Other recommended areas for ILRI learning and capacity strengthening are that:

- ILRI expands the learning and capacity strengthening assessment to other countries in the CORAF region (especially Nigeria) to identify gaps and needs of stakeholders.
- ILRI considers establishing and supporting ‘Centers of Excellence’ among universities and NARIs to serve as direct partners through which interventions will be channeled within the subregion.
- ILRI conducts a two-day ‘stakeholders’ planning meeting’ involving selected universities, R&D institutions and producer/trader associations to determine nature of training collaboration that can address the issues identified in the study.
- ILRI to resuscitate the old ILCA training programs and short courses that took place in the 1970s and 1980s. In particular, it should consult the database of previous trainees from the CORAF region and make them ‘focal points’ of privileged partners for ILRI’s outreach programs in their countries.
- ILRI should consider laying more emphasis in its training on new and ‘soft skills’ including participatory methods, ICT use for knowledge transfer and market access, skills in leadership and decision making, negotiation and conflict resolution methods, effective communications and business management skills.

3.5 Limitations of the study

- The CORAF region comprises 21 different countries with three major languages and discussing the questionnaires with identifiable institutions and organizations on telephone and trying to translate was a very difficult task to the consultant. Within the limited resources and time constraints, only seven countries provided primary data and the results may not necessarily represent the whole region.
- Questionnaires e-mailed to contact persons in some countries were not returned as some refused to answer within the time frame.
- The number of days allotted to this study is inadequate considering the number of respondents expected to provide answers to the questions to produce a comprehensive report.
- The data collection relied heavily on telephone calls and email. Getting in touch with contact persons in countries other than Ghana was difficult as calls did not always get through, or respondents unwilling to answer all the questions on telephone.
- Money from the consultant’s fees had to be paid to some officials in countries other than Ghana to follow-up the questionnaires.
- Some questionnaires were not fully answered; some were answered halfway.
- Contact persons in the listed countries above had it tough convincing livestock associations to complete the questionnaires.
Bibliography


Annex 1 Profiles of potential key partners of ILRI

Out of the institutions surveyed, we provide a profile of potential key partners ILRI could work with to achieve its objectives. They are:

a. Subregional institutions

CORAF/WECARD

CORAF/WECARD’s mission is:

- To improve the efficiency and effectiveness of agricultural research in West and Central Africa by contributing to the construction and the consolidation of the capacities of the National Agricultural Research Systems (NARS), through co-operation between its members, development partners, regional and international organizations, private sector, non-governmental organizations, users of research results on one hand, and
- To consolidate the position of the West and Central African subregion within the context of the international agricultural research and development, on the other hand.

CORAF/WECARD, mandated to implement the subregional agricultural research policies defined by the political authorities of member countries, has set as its objectives to:

1. promote co-operation, consultation and information exchange between member institutions on one hand and the partners on the other
2. define joint subregional and regional research objectives and priorities
3. serve as a consultative body for research carried out by regional and international organizations operating at the subregional level
4. develop joint research programs in order to strengthen complementary activities of CORAF/WECARD and its partners
5. harmonize the activities of existing research networks, and facilitate the creation of new regional networks or other operational research units with a regional character.

b. National institutions

Animal Research Institute (ARI)

This institute is mandated to develop and transfer technologies related to livestock and poultry production in Ghana. Their contribution to national economy would be to stimulate, through research and development, accelerated production and consumption of animal protein. ARI’s vision is to be the centre of excellence and preview reference points in Ghana for all matters pertaining to scientific and technological development and utilization of domestic animals and wildlife resources.

ARI’s objectives are:

- To produce technologies for good quality feeds and improved forages and develop strategies for sustainable management of natural resources and rangelands for farm animals
- To genetically improve farm animals as a sort of animal protein
- Control and management of animal diseases and disease vectors
- To develop appropriate models for the transfer of technologies for improved animal production
- To address socio-cultural and economic factors affecting animal production
- To build the capacity to promote commercialization of livestock technologies

Core competence

- Pig, poultry and ruminant production
• Feed formulation from feeding stuff including agro-industrial by-products
• Feed analysis for quality control
• Livestock and poultry disease control
• Grasscutter farming
• Dairy production
• Livestock production economics
• Pasture establishment and management
• Training and consultancy services in animal production and health

Current research and development programs

• Economic feed and management packages for both smallholder and commercial animal agriculture
• Utilization of agricultural and industrial by-products for high quality animal feed
• Grass cutter breeding and production programs
• Enhancing crop–livestock integration in the national farming system
• Efficient use and improvement of national rangelands for animal grazing
• Development of effective disease control and management strategies
• Integration of plant medicine into the orthodox animal health care system
• Identification of socio-cultural and economic factors limiting animal production and technology transfer
• Development of the local dairy industry

Recent achievements

• Formulation and development of custom-made pig rations based on locally available agro-industrial by-products for smallholder farmers in Ghana
• Development of an efficacious vaccination regime against gomboro in commercial poultry, based on the epidemiology and pathotypes of the virus in Ghana
• Genetic improvement of Sanga cattle for milk production
• Identification of factors in fleecing successful drug treatment of cattle dermatophilosis
• New feeding regimes for more profitable broiler production
• Participatory transfer of technologies from improved small ruminant production in small communities
• Development and transfer of improved feeding, health and marketing strategies for dairy production
• Production of highly nutritious pasture seed
• Control of eimeriosis (coccidiosis) in lambs

Veterinary Services Directorate (VSD) of Ministry of Food and Agriculture

The vision of VSD is to create an animal health system which provides quality animal health services to enhance livestock productivity and production. Its mission is to ensure a stable animal health situation through the provision of quality services by both public and private sectors to enhance livestock production and productivity.

Objectives of VSD:

• Provide animal health services for the national livestock in order to further the expansion of the livestock industry in Ghana
• Protect public health by controlling animal diseases communicable to human beings
• Protect the health and safety of pets zoological animals
• Alleviate suffering among animals

These activities are achieved through the following units:

• Epidemiology unit studies the dynamics of health/ill-health processes in the livestock and poultry industry. It investigates causes of diseases and their spread in space and time.
• Tsetse and trypanosomiasis unit is responsible for the control of tsetse flies and trypanosomiasis through the country.
• Laboratory services unit provides veterinary diagnostic services as well as technical support for animal health extension staff and the rural farmer.
Animal Production Directorate (APD)

The mission of APD is to develop, promote and sustain poultry and livestock production for food security, employment creation, income generation through research, effective technical support, extension services, agri-business and industry whilst ensuring that gender and environmental issues are adequately addressed.

Functions of APD

- Policy formulation and delivery of technical support
- Provision of training on livestock and poultry production
- Implement national livestock breeding policy at the six livestock stations
- Promote dairy industry through workshops and provision of six dairy processing factories in Ghana
- Promote non-conventional livestock (snail, grass-cutter, rabbit among others)
- Facilitate programs for increasing ruminant and non-ruminant productivity and production.

c) NGOs

Heifer International in Ghana

This international NGO is focusing on the provision of food and income-producing animals alongside training in skill development, participatory methods and gender, with the view to reduce hunger, poverty and environmental degradation. The NGO has projects in 13 African countries including Ghana, Togo, Burkina Faso, and Kenya, among others, with emphasis on the following:

- Animal health management
- Office issues
- Training/capacity building
- Environment
- Gender
- Groups with special needs

Producer and trade organizations

Farmer-based organization (Ghana National Association of Poultry Farmers-GNAPF)

The vision of GNAPF is to ensure the development of commercial poultry farming so as to attain national self-sufficiency in poultry and poultry products as a food security measure for the country.

The association has the following objectives:

- To plan the development of commercial poultry farming so as to attain national self-sufficiency in poultry and poultry products
- To advise government or any institution set up by government and any other non-governmental institution on all matters affecting commercial poultry farming
- To procure and distribute inputs to all poultry farmers through their regional associations
- To compile all statistical data on all aspects of commercial poultry farming
- To coordinate the activities of the regional associations
- To act as an arbitrator in settling disputes within the national association
- To invest any funds of the national association which may not be immediately required
- To organize seminars and training programs to enhance farmers know-how
- To do such other things as appear to be incidental or conducive to the attainment of any of the above subject.

Functions of GNAPF

- Liaise between government institutions and the association for dissemination of information both vertically and horizontally
Monitoring of government policies and lobbying of issues that will enhance the growth of the industry as well as make recommendations to the national executive council of the association on its findings.

Prepare from time to time raw materials and poultry prices, price trends and compute cost of feed products based on prevailing prices.

Input suppliers and service providers

Sotrec Meat Company Limited (meat processor)

Sotrec Meat Company was established to import, process and distribute meat to all parts of the country. In addition the company has established livestock farms while purchasing local animals for processing and distribution.

Reiss & Co (input suppliers)

Reiss & Co (Ghana) Ltd which was established in 1952 is a multinational company with five departments that import products from all over Europe. The departments are agricultural department which is responsible for agro-chemicals, mechanical department which deals in generator sets, and outboard motors and mining equipment. The pharmaceutical department deals in human drugs, Reiss information systems that deal in computers as well as veterinary department that deals in veterinary medicine etc.

The veterinary division imports quality vet drugs from Dopharma International BV of Holland, Fort Dodge of Holland and day old chicks from Pluriton BV of Holland.
## Annex 2  List and contacts of informants

<table>
<thead>
<tr>
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<td>Tairou Adam</td>
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<td>45</td>
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<td>46</td>
<td>Dr Philip DAWUDA</td>
<td>Integrated Dairy Institute</td>
<td>Executive Director</td>
<td>Nigeria</td>
<td>M</td>
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<td>Ibrahim A Sadeeq</td>
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<td>Ahmed Mangari</td>
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<td>51</td>
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<td>Dr Mahamadou Gandah</td>
<td>Niger National Agricultural Research Institute (INRAN)</td>
<td>Scientific Director</td>
<td>Niger</td>
<td>M</td>
<td>INRAN <a href="mailto:Madou40@yahoo.com">Madou40@yahoo.com</a></td>
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<tr>
<td>55</td>
<td>Dr Idi Assoumane</td>
<td>INRAN</td>
<td>Head of Animal Production Dept. INRAN</td>
<td>Niger</td>
<td>M</td>
<td><a href="mailto:a_idi@yahoo.fr">a_idi@yahoo.fr</a></td>
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Livestock sector training needs assessment report for the CORAF/WECARD region