



Livestock sector training needs assessment report for South Asia

ILRI

INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

LIVESTOCK SECTOR TRAINING NEEDS ASSESSMENT REPORT FOR SOUTH ASIA

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Acronyms

ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
BAU	Bangladesh Agricultural University (BAU)
BRAC	Bangladesh Rural Advancement Committee
CORAF	Council for Agricultural Research and Development
CORRB	Council of Renewable Natural Resources (RNR) of Bhutan
DZADP	Dry Zone Agricultural Development Project
FAnGR	Farm Animal Genetic Resources
GDP	Gross Domestic Product
ICAR	Indian Council of Agricultural Research Institutes
ILRI	International Livestock Research Institute
MDG	Millennium Development Goals
NAARM	National Academy of Agricultural Research Management, India
NARC	Nepal Agricultural Research Council
NARS	National Agricultural Research Systems
NGO	Non-governmental organization
NIRD	National Institute of Rural Development, India
NZFHRC	National Zoonoses and Food Hygiene Research Centre, Nepal
PARC	Pakistan Agricultural Research Council
PGIA	Post-graduate Institute of Agriculture, Sri Lanka
RDA	Rural Development Academy (RDA), Bangladesh
SADC	Southern African Development Community
SAU	Selected State Agricultural Universities

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 always be present, but should truly reflect the changing conditions and ongoing transformations. To make capacity strengthening activities more relevant in addressing the needs of the livestock innovation system the Capacity Strengthening Unit of ILRI, in collaboration with APAARI, conducted during 2007 an assessment of livestock capacity requirements of the South Asia region—a needs assessment study aimed at revisiting its priorities for capacity strengthening. The initial results of this study were presented during a multi-stakeholder workshop organized jointly by APAARI and ILRI in Kathmandu, in October 2007, for validation. The key findings of this study are presented in this report. The overall purpose is to identify common priorities across countries in the region 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 Professor MNM Ibrahim and Iain Wright, ILRI's Regional Representative in Asia, in conducting this study and preparing this report. All organizations and individuals who responded to the survey questionnaire and attended the consultative workshop are recognized for spending their valuable time and for making significant contributions. 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 the South Asia region. We will make every effort to support the national and regional initiatives in implementing these priorities.

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Executive summary

In the South Asian region, the limited capacity and/or the lack of competent technical, scientific and extension personnel have often been identified as the major bottleneck in implementing livestock development program. Also, isolation from scientific information and limited opportunities for collaborative research have been identified as key constraints to the effective generation and dissemination of research outputs for the benefit of livestock producers. Country-specific assessments data on capacity building needs for the South Asian countries are scarce.

The objective of this preliminary study was to assess the countries' capacity development needs and priorities to meet future challenges and accordingly cater to the emerging needs of the livestock sector. A structured questionnaire was developed and used as one of the data-gathering tools in the assessment of training needs and priorities. In June 2007, the questionnaire was emailed to various key informants (research managers, NARS scientists and extension officers; university academics, NGOs, donor agencies and private companies) in Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. Also, few selected individuals from the above categories were contacted by telephone or had interviews to obtain the information required. In total the questionnaire was emailed to 144 individuals, of which only 52 responded. In addition 10 individuals were contacted by telephone and a detailed discussion on various sections of the questionnaire was held.

Findings

- The study revealed that regional groups face different legislative and institutional context, as well as geographic and socio-economic situations. Recognizing such differences highlights the need for the capacity building processes or skills and training needs analyses to be tailored to suit regional context and carried out by groups themselves with the assistance of governments.
- Many institutions in the target countries are facing erosion of technical skills because of lack of training opportunities for advanced studies and brain-drain of its highly qualified scientists. This situation has arisen because of scarce opportunities for the training and development, and career progression in these countries.
- Countries have limited capacity to undertake upstream and cutting edge research in emerging sciences such as biotechnology, genetic engineering, molecular biology, GIS, biometrics/modelling/climate change, value and supply chain, and livestock economics.
- Professional skills of research management teams need to be expanded to include managerial skills and financial skills, and also the capacity to work efficiently and harmoniously in multi-disciplinary teams. Some of the training needs identified are: research planning and research methodology, priority setting for research issues, project/program planning and management, skill and orientation to implement project-based budgeting, monitoring and evaluation of research progress, and sensitization for research managers about prioritization.
- Technical training emphasis was on specialized training in biotechnology, particularly in the field of molecular genetics/biology at Masters and PhD level. Other general technical training needs for many NARS scientists were biometrics, bioinformatics, value-addition, and economic analysis of surveillance and disease management.
- More than 80% of the respondents rated the following additional skills as extremely important: strategic planning, facilitation skills, monitoring, evaluation and impact assessment, planning and priority setting, gender analysis, sustainable use of animal genetic resources, management of gene bank, proposal writing, scientific writing, effective communication, value chain analysis, as well as poverty, vulnerability and risk analysis.

Conclusions and recommendations

- Need to organize awareness seminars to policymakers and administrators on the importance of assessing the capacity building needs of these countries, and ways of addressing these issues.

- As a first step forward, the countries should conduct training needs assessment workshops involving all relevant stakeholders of the livestock sector and prepare a directory detailing the short-, medium- and long-term needs. ILRI could play a crucial role in assisting the countries in the region to identify capacity building and training needs and also spearhead in making a coordinated effort to rectify the short- medium- and long-term needs.
- The next step would be the 'Training of Trainers'. ILRI should take the lead in training the 'Trainers' (key researchers, training and extension managers; both from public and non-governmental organizations). For this activity, regional centres such as NAARM (National Academy of Agricultural Research Management) or NIRD (National Institute of Rural Development) in Hyderabad could be used. Thereafter, the trainers should be motivated and supported in organizing courses for trainers in their own institutions/countries.
- ILRI could also consider partnering with local training institutions and NGOs and help to build their capacity over a long and sustained period of time.
- ILRI should identify labs and key institutions in the region to impart training and address regional priorities in a network mode. To satisfy the immediate need of training in genetics and molecular characterization work, ILRI should use its molecular laboratory facilities in China to train young scientists in the region.

ILRI's role

- ILRI is the only international organization dealing with livestock development throughout the world. Its effort on livestock development in African countries is noteworthy. Similar effort in South Asian countries is expected from ILRI.
- As a first step forward, ILRI should organize awareness seminars to policymakers and administrators on the importance of assessing the capacity building needs of these countries, and ways of addressing these issues.
- ILRI together with some reputed NARS institutions should take the lead in filling the knowledge gaps by providing short- and long-term training to scientists and extension personnel. This will help the institutes to provide demand-driven services to the livestock sector.
- To satisfy the immediate needs of training in genetics and molecular characterization work, ILRI should use its molecular laboratory facilities in China to train young scientists in the region (6–8 weeks training should suffice).
- ILRI should assist countries in the region to generate funds from donor agencies in the region in order to address researchable issues across countries/regions both as short- and long-term programs and picks up science leaders accordingly to deliver them.
- Many of the issues discussed above have existed for quite sometime. ILRI may initiate/arrange discussions on common issues and prioritize them. Roles and responsibilities of ILRI to address some of these issues should be clearly defined.

Limitations of the study

With only 36% of respondents, the training needs questionnaire used in this study should be seen as only an initial tool in an iterative and participatory capacity building process driven primarily by groups themselves. This tool should be used in association with a wide range of events like workshops, meetings and seminars involving all actors and stakeholders at provincial, district, national and regional levels.

1 Background and methodology

1.1 Introduction

The livestock sector in Asia is undergoing unprecedented rapid and dynamic change which presents opportunities for improvement in livestock-related livelihoods as well as posing a number of challenges to poor livestock keepers. Rapidly growing demand for livestock products are creating new opportunities for poor livestock keepers, but changes in processing and retailing—such as the supermarket revolution—increased concerns about environmental impacts of livestock production, and new and emerging diseases could threaten the access of poor livestock keepers to these opportunities. This is in addition to growing concern that much of the past livestock research has not contributed to a reduction in poverty in many parts of Asia. Tools, systems, and policies to support sustainable management of livestock are of little use without the capacity to apply them. As such, now is the time to take a fresh look at how livestock research can contribute to poverty reduction, and more importantly to assess the capacity building and training needs to confidently move forward in achieving the goals set in MDGs.

Capacity strengthening is defined 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. Without critical mass of well-trained professionals, the quality and quantity of research will diminish, as will the returns to the global investments in agriculture and the reform agenda. The term capacity strengthening or capacity development does not imply that there is no capacity in existence; rather it includes the building up and strengthening of capacity, usually on the basis of existing capacity that has been eroded or destroyed. The term encompasses developing the required capabilities to meet immediate and future needs. Capacity strengthening is an ongoing process and it has direct links with human development. As a development input, capacity strengthening is a dynamic phenomenon that must always present, but truly reflect the changing conditions and ongoing transformations. Capacity strengthening is about empowering people on a sustained basis. This can happen by developing competencies (skills, knowledge, and attitudes) that will enable people to develop themselves.

1.2 Importance of the livestock sector in the economy and rural livelihood

In Asia, agriculture contributes up to 26% of GDP of which livestock contributes approximately 10 to 20% in terms of income, insurance, food (meat, milk, eggs etc.), hides/skin, traction and manure. Turning to the critical question of whether GDP growth originating in agriculture can reduce rural poverty, the WDR 2008 assembled data from all types of developing countries and found that ‘GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture’. It is estimated that the human needs for livestock products (food, hides/skins and other products) in developing countries will more than double in the next 25 years (Delgado et al. 1999). The rapid increase in demand is attributed to rapid increase in human population, rising incomes and rapid urbanization, with accompanying changes in preferences for foods of animal origin. Approximately 200 million poor people in South Asia depend to some extent on livestock for their livelihoods.

Country-specific national livestock development plans often make mention of poverty alleviation, employment generation, food security and nutritional improvement as their goals. Studies have clearly demonstrated that livestock, especially dairy animals, have increased income and employment, and helped to reduce poverty (Doornbos et al. 1990; Somjee and Somjee 1990; Viswanathan 1992; Huq 1994; Thirunavukkarasu et al. 1994; George 1996). Livestock have contributed to a reduction in income inequality and poor farmers prefer to invest in livestock than in anything else, particularly dairy animals, as a means to improve their asset and income (Verma and Malik 1991; Adams and Alderman 1992).

In India, the livestock sector is livelihood intensive and 70% of all species of livestock are owned by the marginal farmers. Except for eggs and poultry meat, 80% of all other livestock produce in India come from smallholders. The livestock sector contributes 25% to the agricultural GDP. In the past four decades, the livestock sector in India has demonstrated its vast potential as the fastest growing sector in the rural economy. This has led widespread growth in rural employment and household income enhancing the livelihood of millions of resource poor rural livestock producers.

In Bangladesh, smallholder farmers who are dependent on indigenous livestock raise more than 85% of livestock. In Bangladesh, livestock contribute 9% to the agricultural GDP. The contribution to the agricultural GDP increases to 14% if the value of traction and manure is included in the computation. Livestock perform many economic, social and environmental functions in the mixed farming systems in the country. Some of the important features of recent government policies towards the livestock subsector are: the non-involvement of government in production, processing and marketing activities; the support of the private sector and non-governmental organizations (NGOs) in these activities through research, extension, training, credit and the development of appropriate infrastructure.

In rural Pakistan, livestock is the mainstay of the socio-economic life of the people. It is the largest subsector of agriculture, totalling 2.5% of the national GDP and 12.3% of exports. Livestock products are an important component of diet and source of good quality proteins, minerals and vitamins in the rural areas.

In Sri Lanka, 30% of the land use is for agriculture. Agriculture contributes 5.6% of the GDP. Just over 20% of this is in the livestock sector, which provides livelihoods for 50% of the 3.3 million agricultural smallholdings (2002) for whom livestock forms an integral part of the production system. Authorities consider the livestock sector as the most promising sector for the employment of a large number of people in poverty alleviation programs in areas where livestock farming is a way of life.

In Bhutan, livestock are an integral part of agriculture in the country and contribute about 10% to the GDP. Also in Bhutan, the GNH (Gross National Happiness) concept aims to tackle major socio-economic concerns including poverty, low per capita income, low literacy, increasing human population and unemployment (MoA 2002a). About 80% of the population is smallholder mixed farmer (MoA 2001). Development policies for intensification of agriculture (crop and livestock) are therefore being pursued by the government to enhance rural income and generate employment opportunities while taking into consideration the conservation and management of natural resources (MoA 2002b). About one-third of the Bhutanese population lives below the national income poverty line (RGOB 2005).

In Nepal, the contribution of agriculture to national GDP is 38%. The growth rate in agriculture GDP over the last 10 years has been a modest 2.7% and has barely kept pace with the population growth rate of 2.24%. The contribution of the livestock sector to the agricultural GDP is currently estimated at 31% and is expected to increase to 45% in the coming years. Agriculture GDP per hectare is USD 649 but 40% of the agricultural households have less than 0.5 ha and this correlates with the incidence of poverty. Nevertheless, with increased demand for livestock products due to increasing rate of urbanization, rising income and changed food habit, the fisheries (9.66%), cash crops (5.55%) and livestock (3.57%) performed better than the food grains (2.32%), other crops (3.02%) and forestry (0.26%) during the ninth plan. These rates of growth in livestock and fisheries are expected to exceed in the future.

1.3 Background to the study

The analysis of the development process in the developing countries has often identified the limited capacity and/or the lack of competent technical, scientific and extension personnel. Moreover, isolation from scientific information and limited opportunities for collaborative research are key constraints to the effective generation and dissemination of research outputs in the form of improved and new techniques and innovations for the benefit of the agriculture and livestock producers.

Currently the Capacity Strengthening Unit of ILRI is in the process of preparing its L&CS strategy and policy. To be effective, such a strategy should be based on: broad-based participation and locally-driven agenda, building local capacities, on-going learning and adaptation, long-term investments and integration of activities at various levels to address complex problems. One of the key activities in the strategy development process is the assessment of the capacity requirements at individual, group, organizational and societal level—a needs assessment study. Training needs assessment is a tool utilized to identify what learning and capacity strengthening activities should be provided to enhance the productivity, performance and impact of individuals, organization and the society at large.

1.4 Purpose and objectives

The objective here is to identify the priority learning and capacity strengthening activities to be facilitated and/or undertaken by ILRI. Although ILRI's mandate is global, the priority regions for ILRI's L&CS activities are sub-Saharan Africa and Asia. There is a growing awareness that ILRI needs to continue to provide a variety of training types, themes and delivery modes to suit the heterogeneous needs of NARS. While recognizing this diversity to be cost effective, it was decided to perform the needs analysis on a subregional basis using the existing geopolitical grouping. The five subregions identified are: West Africa (CORAF Region), Eastern and Central Africa (ASARECA Region), Southern Africa (SADC Region), South Asia and Southeast Asia. ILRI recognizes the activities of the other national and regional players in strengthening capacity of the NARS. ILRI is keen to identify the 'niche' in L&CS based on its mission, mandate, research base as well as its competitive and comparative advantage. ILRI wants to reinforce and add value to the ongoing national, regional and global initiatives by working through innovative partnership and networking arrangements. The greatest demand in future is anticipated for specialized short courses, individual non-degree and higher degree training. Emphasis on support to local universities and subregional entities are strongly justified as possibly the most sustainable road to impact on the rest of the national R&D system.

1.5 Procedure/methodology

A structured questionnaire was developed and used as one of the data-gathering tools in the assessment of training needs and priorities. Information on the following skills and knowledge areas were collected (questionnaire used is given in Annex 1):

- Key research management issues and skills and training required to address them
- Key research issues facing the livestock sector
- Training needs, priority ratings and suggested remedies on a range of topics related to agricultural research and development, which included research methodology, leadership, planning and priority setting, value chain analysis, poverty and risk analysis, and communication and writing skills.

The questionnaire was emailed to various key informants (research managers, NARS scientists and extension officers, university academics, NGOs, donor agencies and private companies) in Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. Also, few selected individuals from the above categories were contacted by telephone or had interviews to obtain the information required. Its objective was to assess their own countries capacity development needs and priorities to meet future challenges and accordingly cater to the emerging needs of the agriculture sector.

1.6 Outline of the report

The report is presented in three chapters. The first chapter provides background information on the study, rationale and objectives, and the methodology used in conducting the study. Chapter 2 discusses the survey results and analyses, and also reviews the secondary information available on the aspects of capacity strengthening and training needs for the region. This chapter also lists the institutions (country

and region wise) which have the potential and capability to undertake the identified training activities with some expertise and funding from international funding organizations. Chapter 3 details the outcome of the study and lists the key conclusions and recommendations, potential partners for collaboration and the role of an international organization such as ILRI.

2 Results and analysis

2.1 Introduction

In this chapter the number of responses received has been collated country-wise and stakeholder-wise. Secondary information available on studies related to livestock and training needs are summarized in this section. Results of this study are discussed under research management issues, key research issues, training needs and possible training suppliers in the region.

2.2 Data collection

In June 2007, key/prominent persons involved in the livestock sector in the six target countries were contacted and email contacts of reputed researchers, research managers, and extension officers from NARS and NGOs was obtained. In total the questionnaire was emailed to 144 individuals, of which 52 responded (36% responses). The number of individuals contacted in each country and the responses received are summarized country-wise and stakeholder-wise in the tables below. In addition, 10 individuals were contacted by telephone and a detailed discussion on various sections of the questionnaire was held.

Table 1. Discussion on various sections of the questionnaire held country-wise

Country	No. of individuals contacted	No. of responses received	Telephone calls/discussions
Bangladesh	28	11	2
Bhutan	4	2	1
India	30	10	2
Nepal	20	7	1
Pakistan	34	10	–
Sri Lanka	28	12	4
Total	144	52 (36% responses)	10

Table 2. Discussion on various sections of the questionnaire held stakeholder-wise

Stakeholder group	Number of respondents	Telephone calls/discussions
Donor	2	1
NARS	23	2
University	15	2
NGO	9	2
Commercial company	3	2
Farmer federation	–	1
Total	52	10

2.3 Previous findings on the key issues related to livestock sector and capacity need

In the past, studies targeted towards identifying the training and capacity building needs at national level in relation to the agriculture sector and the livestock in particular is scarce. In the target countries limited information is available; this too is much localized and is exclusively development project based funded by donor agencies. In 2000, ILRI initiated a study (Devendra et al. 2000) on 'Improvement of livestock production in crop–animal systems in agro-ecological zones of South Asia', which included all six countries in the region. This study concluded that:

- Much of the research conducted by the NARS in all countries is component-oriented and lacks multi-disciplinarity and a farming systems focus.
- In many institutions, natural resource management issues are neglected and there exist disciplinary barriers between the soil, plant and animal sciences which preclude a holistic approach.
- In addition, there is also an unfortunate rift between veterinarians and animal scientists. Research programs often lack leadership by experienced scientists and fail to focus on the problems that need to be addressed.
- Priority setting is very weak in all countries.
- For crop–animal systems research needs to be applied more forcefully, research capacity in many of the NARS will need to be strengthened.

Based on the above findings, the above authors specifically highlighted the role of ILRI in South Asia region, which are quoted below:

1. Partnerships between ILRI and NARS will be essential to address the researchable issues identified. Priority setting is needed, and it is clear from the country visits that, throughout the region, this is weak in every research system. ILRI has considerable experience in *ex ante* analysis for this purpose. NGOs can also play a valuable role in this process by defining uptake pathways and diffusing new technology.
2. ILRI can provide back up in a number of cross-cutting methodologies. For example, the need to characterize indigenous breeds was highlighted in every country. Concerns about genetic erosion, resulting from crossbreeding, were expressed and ILRI can transfer its experience in modern biotechnology (e.g. the use of genetic markers) to the region. The use of such biotechnology in disease diagnosis and vaccine development, and the experience with tick-borne diseases are other areas of opportunity. Tick-borne diseases are increasing in importance in a number of countries with the development of crossbreeds based on temperate breeds. ILRI can also provide expertise in socio-economics and policy research, e.g. marketing issues.
3. Finally, ILRI can play a valuable role in strengthening NARS capacity. Training in farming systems research and in specific laboratory techniques in molecular biology are two areas of priority. Information exchange can be improved in all of the countries, and networking promoted as a means of bringing together scientists from the region. Ultimately, networking can foster linkages with Southeast Asia.

A shift towards a more market-oriented approach in the agricultural sector demands the extension services to focus on farming as a business. This shift demands training protocols of government (NARS), private and donor organizations to be redesigned to cater this shift (ADB 2007). Joseph (2006) emphasizes that in India, to enable partners and stakeholders to understand and appreciate the needs and process of change in the right perspective and to actively participate in the reform process, training and capacity building are essential prerequisites in all Indo-Swiss projects. In the Asian region, there is little awareness about the importance of animal genetic resource conservation, and capacity to address it is limited. Capacity building and training components are therefore critical for both short-term (training) and long-term sustainability (capacity building) (UNEP–GEF–ILRI FAnGR Asia Project 2007). The main stakeholder groups are the farmers and farmer communities, researchers and academics, extension workers, NGOs and community leaders, and government agencies and ministries operating in the livestock sector. These can also be defined in the following terms: local communities; national agricultural research centres/institutes; national universities; national ministries (agriculture and natural resource management); and regional and international organizations. In this study, a team of consultants were contracted for each country to study the training and capacity building needs of indigenous farm animal genetic resources. There is generally a lack of awareness of the importance of FAnGR and wild relatives as genetic resources for breeding improvement among all stakeholder groups. Impacts of policies that favour use and importation of exotic breeds and cross-breeds are not properly understood, even though the consequences of such policies may include loss of valuable genetic diversity and loss of potential income and economic stability for low-input farming communities. The latter impacted on the sustainable livelihoods of the farmer communities, which importance has been emphasized in numerous

national to global policies fora. Recommendations of this team for Bangladesh, Pakistan and Sri Lanka are summarized below:

- Awareness seminars/workshops need to be conducted to all stakeholders including farmers, non-governmental extension officers, policymakers in relevant ministries, researchers in NARS, academics etc. on the value of indigenous breed types of FAnGR.
- University-level education in the project countries includes courses and training in animal breeding, genetics and reproductive management. There is some specialization in breed characteristics, phenotypic characterization, and some needed facilities are available; however the capacity that does exist is inadequate to address the project objectives. Most importantly, capacity to carry out breed survey methodologies, genetic improvement, molecular characterization, and economic valuation, four of the most important skills needed to implement this project, is weak or non-existent. The human capacities training at MSc/PhD level in the following fields are necessary to respond to the future needs of the countries. Livestock breeding and conservation, animal breeding, animal genetics, molecular genetics, and training on FAnGR biodiversity and conservation.
- The human as well as infrastructural capacity of indigenous livestock marketing system needs to be strengthened. The specialized training (MSc/PhD level) in the fields of economic valuation of FAnGR, markets and marketing of FAnGR and their products, are needed.
- The curricula and facilities for existing under/postgraduate education in animal breeding/genetics at the university level need to be strengthened. Sufficient books, regular standard journals, national data sets, case studies, internet and computers with CD drive, animal breeding software etc. need to be made available.
- Farmers understand the value of indigenous breeds to varying degrees, and in some cases (e.g. pig farmers in Sri Lanka) address farmers' cross-breed indigenous breeds and their wild relatives as a breeding strategy. But even among those few farmers, there is insufficient capacity (knowledge, networks and tools) to apply FAnGR management strategies that effectively increase productivity, market potential, and conservation.
- Understanding about FAnGR management, and how its potential value might be addressed in policy and market structures is also inadequate. Basic understanding on the impact of policy and markets on FAnGR management, and its potential returns is needed at all policymaking levels (local to global).

In 2006, the author was involved in the final evaluation of European Commission funded project implemented by CARE in Sri Lanka titled 'Dry Zone Agriculture Development Project' (Ibrahim and de Jonge 2006). Findings and conclusions derived clearly emphasize not only the need for training and capacity building, but also how well they are appreciated by the various stakeholder groups. Some of the information gathered is summarized below:

- NGO as well as government partners of the project appreciated the capacity building through training, cross and exposure visits.
- Many of the partners' staff members expressed that this capacity building was one of the best things that could have ever happened to them: 'We will never forget the insights we obtained and apply them for the rest of our working years,' mentioned Cashew Corporation Officers. This indicates a relatively durable impact on these organizations even if the benefit of this impact will not always continue to come to the clients of DZADP.
- The project has had a considerable impact on gender in the project area. Governments as well as NGO partners have been sensitized on the gender equity issue. In the resource pool for training, the gender training plays an important role, especially the training in schools.
- The training and advocacy on gender equity have had a very positive impact on members of farmer organization (FO), whose female membership and leadership importantly increased. Most FOs with female office bearers function very well, especially women FO treasurers are in demand since they are considered to safeguard the FOs cash and to be incorruptible.
- In particular female youth has benefited from the project in the domain of agriculture and agro-processing enterprises, and capacity building.
- Male youth also benefited, but according to the mission's observation, only to a lesser extent. Women groups organize themselves easily. When there are many women in a group, young men feel mostly shy to participate—a culturally defined mechanism. To organize them may need a separate approach and initiative by male project staff (gender equity).

2.4 Survey results

2.4.1 Key research management issues

The main obstacle faced is to get international and national partners to deliver quality research in a cost-effective and transparent manner. There are researchers who are genuinely committed to their profession, but often they lack the professionalism and competence required to conduct good quality research due to lack of training and opportunities to practice their skills. The study revealed that regional groups face different legislative and institutional context, geographic and socio-economic situations, and the staff they can call upon to perform the desired functions. Recognizing such differences highlights the need for the capacity building processes or skills and training needs analysis to be tailored to suit regional context and carried out by groups themselves with the assistance of governments.

Many institutions in the target countries is facing erosion of technical skills because of lack of training opportunities for advanced studies and brain-drain of its highly qualified scientists to other institutions within the country/region and to developed countries. The countries have limited capacity to undertake upstream and cutting edge research in emerging sciences such as biotechnology, genetic engineering, molecular biology, GIS, biometrics/modelling/climate change, value and supply chain, and livestock economics. In addition, in many NARS institutions the current generation of scientists would be retiring over the next 3 to 5 years, and younger generation is not technically equipped and motivated to replace them. Some of the common constraints identified by the respondents are given below:

- Retraining of manpower
- Capacity building in areas of bio-informatics, biotechnology, information management
- Funding needs of research
- Generation of new technologies, refinement of existing technologies and their dissemination and adoption
- Higher focus on research outputs and not on outcomes and developmental impacts
- Research prioritization for breeding superior stock for avian species
- Streamlining procurement, procedures including inventory management
- Linking finance with/project base budgeting and associated financial management
- Depleting manpower resources, base and means to minimize this problem.

2.4.2 Key research issues

Animal production

Many of the respondents are of the view that much research has been done on various disciplines (nutrition, management, reproduction, physiology etc.) and many on-shelf technologies are yet to be tested, transferred and adopted. The question is whether we need more (of the same) research, or whether we should focus our attention elsewhere and start addressing the basic question of why technologies are not being adopted. Moreover the root causes for non-adoption of appropriate technologies, and the question as to whether livestock research has truly addressed these livelihood issues of the pro-poor is questionable. Some researchable areas common to the region are listed below:

- Developing an integrated package of practices for appropriate husbandry, feeding, breeding, reproductive management, diseases control and product technologies, and transferring them to rural farmers.
- Management of dairy wastes especially in semi-intensive/intensive production system; and identification of strength and weaknesses of livestock production systems, and situation analyses.
- Use GIS as a tool in livestock systems research with a view to develop production models for livestock species in various agro-ecological zones.
- Genetic improvement of avian species through biotechnology, application of biotechnology in poultry nutrition, and recombinant proteins for enhancing poultry production.

- Upgrading of indigenous animals with a view to conserve indigenous farm animal genetic resources.
- Development of feed rations by using available resources in rural areas by assuring their quality storability and these technologies must be simple so that it can be practised by even a rural uneducated farmer.

Animal health

Initiation of program to upgrade labs/institutions handling pathogens of public or animal health significance and staff training is required. Strengthening and/or establishment of national culture collection centres for identification, typing, handling and cataloguing of microbes significant to public, plant and animal health is needed as well. Other common areas which need to be addressed are:

- epidemiology and economics of livestock diseases
- improving efficacy and efficiency of existing vaccines
- avian influenza and other new diseases of poultry
- issues related to animal health and welfare measures
- mechanism for disease surveillance and effective control strategies
- empirical models for management of bio-security threats.

Policy/institutions

Why policies fail and why they are not implemented are the core questions and challenges to be addressed. These refer back to weak institutional structures, performance and incentive systems. To some extent, these are researchable issues, but research alone will not address the problems. Open-mindedness, new attitudes and commitment is needed among both decision-makers and service providers. Changes in attitudes and commitment could be addressed by undertaking organized capacity building and training exercises. Specific areas which need to be addressed for the region are:

- Lack of a coherent and sustained long-term livestock development policy that is adequately supported with the necessary infrastructure and the political will to remove the existing inequalities in market prices for imported and local products.
- Absence of common objectives and coordination of activities between the numerous state ministries and institutions that deal with different aspects of livestock production, processing and marketing of livestock products. Lack of awareness of policy issues.
- One way approach (top to bottom) in policy formulation, and lack of participation of all key parties in policy formulation.
- Lapses in implementation and frequent changes in policies.
- Policy interventions on cattle owners who maintain large herds, demarcating grass lands, promoting intensive rearing to solve the conflict which prevails among cattle owners and farmers.
- Livestock policy encompassing all aspects including environment.
- Policies controlling and eradicating the important diseases that limit the productivity of livestock.

Marketing/trade

This is an important and currently very popular research development area. It would be interesting to take stock and see that the impact of research done so far has been objectively transformed to alleviate marketing problems of agricultural commodities, and creating a favourable policy environment for those involved in the agricultural sector.

- policy of price control for locally produced milk
- major discrepancy in the farm-gate price paid to farmers and the price of precuts in the market
- in-depth analysis of market situation
- information flow to and from consumer/producer, and linking livestock producers to markets
- prediction of market dynamics
- lack of mechanism in monitoring the market consistently
- lack of sufficient trained research and development personnel to undertake the studies necessary to overcome the above limitations and apply the findings to improve the economic benefits to rural farmers from livestock farming in Sri Lanka.

2.5 Training needs

The question frequently asked is whether more scientific knowledge alone is the answer, or is it awareness, attitudes and behavioural changes that are required to meet the challenges faced by NARS scientists and extension personnel in the region? We need to ask some hard questions and challenge the current thinking within the current international research and NARS systems.

2.5.1 Research management training

In a resource constraint environment, scientists are required to have multiple skills rather than highly specialized skills only. Moreover, a professional skill needs to be expanded to include managerial skills and financial skills, and also the capacity to work efficiently and harmoniously in multi-disciplinary teams. Unfortunately, many of the research managers in the region have not been exposed to such training activities, and thereby lack the vision of partnership, working towards a common goal, and the concept of teamwork. Some of the related issues raised by the respondents and training needs are summarized below:

- research planning and research methodology
- priority setting for research issues
- more effective planning and implementation
- project/program planning and management
- skill and orientation to implement the project-based budgeting
- monitoring and evaluation of research progress
- financial management
- sensitization for research managers about prioritization.

2.5.2 Technical training

Much of the responses received emphasized the need for specialized training in biotechnology, particularly in the field of molecular genetics/biology at Masters and PhD level. Even though the national governments has invested scarce funds in training NARS scientists and academics in these high tech fields, retention of these qualified and capable young staff has been a problem because of the institution inability to provide the costly equipment and funds needed to actively engage in research. Specialized training needs on the above discipline which were highlighted by the countries are listed below:

- genome mapping, DNA marker and other areas of biotechnology
- molecular genetics and database management.

Other technical training needs which are more general to many NARS scientists of various disciplines are:

- biometrics for livestock research
- management of bioinformatics
- promotion of value-added products with HACCP compliances for export
- economic analysis of surveillance and disease management, e.g. avian influenza.

2.5.3 Additional skills

Responses received on additional skills needed and the proposed interventions needed to rectify the constraint are summarized below. Eighty percent of the respondents rate the following skills as extremely important:

- strategic planning
- facilitation skills
- monitoring, evaluation and impact assessment
- planning and priority setting
- gender analysis

- sustainable use of animal genetic resources
- gene bank management
- proposal writing
- scientific writing
- effective communication

Intervention proposed to rectify the lack of skills is by conducting training courses and workshops.

Other skills needed and rated from extremely to moderately important by 40 to 80% of the respondents are:

- participatory research methods
- leadership and decision making
- design, implementation and assessment of networks and partnerships
- poverty, vulnerability and risk analysis
- value chain analysis, market orientations and implications to R&D
- innovation systems perspective and implication to R&D

2.6 Alternative supplier in the region

The respondents are of the view that in general NARS institutions are not actively involved in capacity building activities, nor do they conduct training needs assessments to identify the sector needs. Conducting refresher courses and training of new recruits on subject matter are some of the routine activities undertaken by NARS. However, many universities in the target countries provide sound technical training on various disciplines in agriculture, both at undergraduate and post-graduate levels.

Institutions involved in training on various aspects of livestock production are listed below:

Bangladesh

- Graduate Training Institute (GTI), Bangladesh Agricultural University (BAU)
- Bangladesh Livestock Research Institute (BLRI)
- Bangladesh Agricultural Research Institute (BARI)
- Rural Development Academy (RDA), Bangladesh
- BRAC (Bangladesh Rural Advancement Committee)
- NGO (World Vision)

India

- Indian Council of Agricultural Research (Extension Division)
- State Agricultural Universities
- National Institute of Rural Development (NIRD), Hyderabad
- National Academy of Agricultural Research Management (NAARM), Hyderabad
- BAIF

Nepal

- Nepal Agricultural Research Council (NARC)
- National Zoonoses and Food Hygiene Research Centre (NZFHRC)
- University of Tribhuvan

Pakistan

- Pakistan Agricultural Research Council (PARC)

Sri Lanka

- Department of Animal Production and Health
- The Post-graduate Institute of Agriculture (PGIA) of the University of Peradeniya
- NGOs (World Vision, CARE International)

Bhutan

- Council of Renewable Natural Resources (RNR) of Bhutan (CORRB)
- Department of Livestock, Ministry of Agriculture

Region

- International Institute of Rural Reconstruction: <http://www.iirr.org/>
- Asian Institute of Technology ('AIT Extension'): <http://extension.ait.ac.th/>
- MDF Training and Consultancy, regional offices in Sri Lanka and Vietnam: <http://www.mdf.nl/>

2.7 Potential partners for collaboration

Regional level

The following training institutions are rather well known in the region and hold the reputation in organizing and conducting various tailor made courses for clients ranging from researchers to extension staff.

- National Academy of Agricultural Research Management (NAARM), Hyderabad, India
- National Institute of Rural Development (NIRD), Hyderabad, India

National level

The following national organizations are recognized institutions in the respective countries and are involved in conducting training courses

- Indian Council of Agricultural Research (ICAR) institutes
- Selected State Agricultural Universities (SAU)
- Bangladesh Rural Advancement Committee (BRAC)
- Bangladesh Agricultural University (BAU)
- Rural Development Academy (RDA), Bangladesh
- PARC and NARC, Pakistan
- Nepal Agricultural Research Council (NARI and NASRI)
- Council of Renewable Natural Resources (RNR) of Bhutan (CORRB)
- Department of Livestock Services, Bhutan
- Department of Animal Production and Health, Sri Lanka
- Post-graduate Institute of Agriculture (PGIA), University of Peradeniya, Sri Lanka.

2.8 Opportunities and challenges for capacity strengthening in the region (based on response and secondary sources)

- As per responses received, there is no indication that systematic assessment studies on capacity building skills and training needs have been conducted in any of the target countries. Moreover, the need for training in many aspects of the livestock sector has been stressed by almost all respondents, including some key chairpersons/directors of reputed institutes in the region. As such, this field of intervention is not only new, but will also be well appreciated.
- Absence of consistency in capacity building at all the levels among the various stakeholders (policymakers, NARS institutions, NGOs, private companies, farmers) involved in the livestock industry makes involvement/intervention an opportunity and at the same time a challenging exercise.
- A challenge would be to change the attitudes and behavioral patterns of research managers/scientists to critically analyse their scientific institutions, their management, capacities and interactions with clients and partners. This will be slow but needed process.
- Some of the reputed INGOs (DANIDA, World Vision, CARE) are involved in training field staff in their project areas, and they are capable and interested to join hands with other international organizations to deliver the much needed capacity building needs.

3 Key conclusions and recommendations

3.1 Introduction

In a resource constrained environment as that experienced in many countries in South Asia, there needs to be a balance between scientists with highly specialized skills and those with multiple skills. The professional skills of both categories need to be expanded to include managerial and financial skills and the capability to work efficiently in multi-disciplinary teams.

The ultimate aim of applied research is the transfer of results to the beneficiaries in order to enhance livestock productivity. This transfer is the mandate of extension services with personnel specially trained to adapt research outputs to the livestock producers' requirements. However, due to lack of operational funds, lack of proper skills and training, and proper motivation, the extension service is often blamed and/or defunct. As such, in many instances researchers are challenged to play an active role in the transformation process of research results into technological packages for transfer to the beneficiaries.

Training and capacity building activities can be categorized into:

Short-term

- Awareness programs on the importance of conducting training needs assessments targeted towards policymakers and research managers
- Immediate support to ongoing research activities through professional, technical and managerial training (train the researcher and technical staff)

Medium-term

- Enhancement of skills (networking, communication, facilitation, planning, monitoring, scientific writing)
- Packaging of research results by scientists/professionals and transfer to immediate beneficiaries (train the trainers) and the ultimate beneficiaries (train the farmer)

Long-term

- Career development and institutional capacity building through under/post-graduate training on genetics and molecular characterization/biology.

3.2 Key findings

- Almost all the respondents and telephone interviews focused on significant constraints and capacity needs at the institution level.
- Professional skill needs to be expanded to include managerial skills and financial skills, and also the capacity to work efficiently and harmoniously in multi-disciplinary teams.
- In general, many of the researchers and managers in the region have not been exposed to managerial and financial training skills and hence lack the vision of partnership, working towards a common goal, and the concept of team-work.
- For all categories of staff of NARS and NGOs, the following skills are a priority and training activities needs to be organized to rectify these skills: strategic planning, facilitation skills, monitoring, evaluation and impact assessment, planning and priority setting.
- For scientists and/or extension managers, skills on proposal writing, scientific writing and effective communication are much needed.

3.3 Major conclusions

- The initiative taken by ILRI in conducting this exercise to assess the training needs is rather new to many of the respondents; it is also well appreciated and has helped the various stakeholders contacted to think and realize the importance of assessing their own needs and that of the agricultural sector.

- The need for training in many aspects of the livestock sector has been stressed by almost all respondents, but there is no indication that systematic assessment studies on training needs have been conducted in any of the target countries.
- As a first step forward, there is an urgent need to motivate these countries to conduct such studies, and prepare a directory detailing the short-, medium- and long-term needs.
- ILRI should not only assist the countries in the region to identify capacity building and training needs but also spearhead in making a coordinated effort to rectify the short-, medium- and long-term needs.

3.4 Recommendations

Country level

- Capacity building and training needs assessments at national and provincial/state/district levels.

Regional level

- Identify labs and key institutions in the region to impart training and address regional priorities.
- NAARM (National Academy of Agricultural Research Management) and NIRD in Hyderabad will be able institutions to undertake awareness programs for policymakers and research/extension managers and training of trainers
- For genetics and molecular characterization training, the ILRI–China joint lab in Beijing could be used.
- ILRI's CaST unit should initiate activities for the South Asian region. Some of the specific inputs are given below.

ILRI's role

- As a first step forward, ILRI should organize awareness seminars to policymakers and administrators on the importance of assessing the capacity building needs of these countries, and ways of addressing these issues.
- ILRI should take the lead in training the 'trainers'. For this activity (3–4 weeks training course) a regional centre such as NAARM and NIRD in Hyderabad could be used. Thereafter, the trainers should be motivated and supported in organizing courses for trainers in their own institutions/ countries. Again this activity should be backed up by ILRI.
- ILRI could also consider partnering with local training institutions and NGOs and help to build their capacity over a long and sustained period of time. As an example, DANIDA together with the Government of Bangladesh has agreed to support (during 2007–2011) the establishment of a 'Poultry Research and Training Centre' at the premises of Chittagong Veterinary and Animal Science University.
- To satisfy the immediate need of training in genetics and molecular characterization work, ILRI should use its molecular laboratory facilities in China to train young scientists in the region (6–8 weeks training should suffice).
- ILRI should assist countries in the region to generate funds from donor agencies in the region in order to address researchable issues across countries/regions both as short- and long-term programs and picks up science leaders accordingly to deliver them.
- Many of the issues discussed above have existed for quite sometime. ILRI may initiate/arrange discussions on common issues and prioritize them. Roles and responsibilities of ILRI to address some of these issues should be clearly defined. The areas of importance should not change with change in leadership.
- ILRI is the only international organization dealing with livestock development throughout the world. The effort of ILRI on livestock development in African countries is noteworthy. Similar effort in South Asian countries is expected from ILRI.
- ILRI together with some reputed NARS institutions should take the lead in filling the knowledge gaps by providing short- and long-term training to scientists and extension personnel. This will help the institutes to provide demand-driven services to the livestock sector.

3.5 Limitations of the study

The questionnaire was sent to about 150 individuals but only 30% responded. A major lesson from this study is that the training needs questionnaire like the one used in this study should be seen as only an initial tool in an iterative and participatory capacity building process driven primarily by groups themselves. This tool should be used in association with a wide range of events like workshops, meetings and seminars involving all actors and stakeholders at provincial, district, national and regional levels.

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Annex 1 A questionnaire for training needs assessment to identify the learning and capacity strengthening, priorities of ILRI research managers/researchers/trainers

Name: _____ Position: _____

Organization: _____ Country: _____

Gender: _____ Contact address: _____

Instruction: Please note Q1 and Q2 to research managers only.

Please identify the key research management issues that you are facing. Please rank them. For research managers only.

What are additional skills and training that you may require to address them?

What are the key research issues facing the livestock production systems in your region?

Animal production

Animal health

Policy/institutions

Marketing/trade

Others

Given the ongoing training activities at the national and regional level, identify areas in which additional scientific technical knowledge is required in addressing these issues?

In the recent past, a number of changes have occurred in the agricultural research and development (R&D) arena. Given these changes, some additional 'soft skills' are needed to be an effective manager/researcher/trainer. These soft skills are listed in the following table. Could you please identify the priority skills that you would require? Please use the following keys – Extremely Important (EI), Moderately Important (MI) and Not Important (NI).

Skill areas	Degree of importance (EI, MI, NI)	Comments (please add whether you think you need soft training (short-term, workshops) or long-term (MSc, post-docs etc.)
1. Participatory research methods		
2. Leadership and decision making		
3. Strategic planning		
4. Intellectual property rights policy		
5. Negotiation and conflict resolution skills		
6. Facilitation skills		
7. Design, implementation and assessment of networks and partnerships		
8. Monitoring, evaluation and impact assessment		
9. Planning and priority setting		
10. Climate change; implications and adaptation strategies		
11. Poverty, vulnerability and risk analysis		
12. Value chain analysis, market orientations and implications to R&D		
13. Innovation systems perspective and implication to R&D		
14. Interaction of crop–livestock–water		
15. Gender analysis		
16. Sustainable use of animal genetic resources		
17. Gene bank management		
18. Convincing proposal writing		
19. Scientific writing		
20. Effective communication		
21. Others (please specify)		

Which other institutes in your country/region are currently offering such training?

In your country/region, who could be the potential partners of ILRI to deliver these courses in a sustainable manner?

Any other suggestions that you may have for ILRI in identifying its priority learning and capacity strengthening activities and collaborating partners in your country/region?

Other relevant comments:

Response received for importance of skills and proposed interventions

Skill areas	Importance* rating (%)			Proposed intervention
	EI	MI	NI	
Participatory research methods	50	50	–	Workshops/training courses
Leadership and decision making	40	50	10	
Strategic planning	85	15		Workshops/training courses
Intellectual property rights policy	20	40	40	
Negotiation and conflict resolution skills	30	50	20	Workshops/training courses
Facilitation skills	80	20	–	Training courses
Design, implementation and assessment of networks and partnerships	40	40	20	Training courses
Monitoring, evaluation and impact assessment	80	20	–	Training courses
Planning and priority setting	85	15		Workshops
Climate change; implications and adaptation strategies	40	30	30	Workshops
Poverty, vulnerability and risk analysis	60	40	–	Training courses
Value chain analysis, market orientations and implications to R&D	50	40	10	Workshops
Innovation systems perspective and implication to R&D	40	40	20	Workshops
Interaction of crop–livestock–water	30	40	30	Workshops
Gender analysis	80	10	10	Training courses
Sustainable use of animal genetic resources	90	10		Training courses
Gene bank management	80	20		Workshops
Convincing proposal writing	100			Training courses
Scientific writing	100			Training courses
Effective communication	80	20		Training courses

* EI – Extremely important; MI – Moderately important; NI – Not important.

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