

## CAPACITY DEVELOPMENT GAP ANALYSIS: NIGER

### Introduction

In 2018 and 2019, the Feed the Future Innovation Lab for Livestock Systems' **Human and Institutional Capacity Development (HICD)** team collaborated with livestock-related research and academic institutions in Niger to identify and assess the training and organizational development needs that would lead to improving their research and teaching capacity in the livestock sector. Using participatory rapid assessment methods, the team identified several gap areas related to the human (individual), organizational, and enabling environmental needs. This brief provides a general outline of these gap areas and recommendations.

### Human Capacity Development

**Laboratory skills gaps:** Lack of professional lab training was one of the most reported concerns of lab technicians, researchers, lecturers and students. Lab technicians and users lack basic equipment maintenance skills, including how to maintain, calibrate, and repair lab equipment, as well as which tests to run and how to interpret the results of tests. The labs are primarily used for demonstration purposes or to conduct basic tests. Students who want to conduct research struggle to find a functional laboratory with working laboratory equipment that meets their needs.

**Technological and practical skills gaps:** Table I summarizes research, teaching, extension, and technical skills gaps identified across all organizations. These gaps create bottlenecks and blockages for the development of researchers, lecturers and students, and hinder their abilities to advance research into new areas. Students lack opportunities to gain practical skills, while lecturers and researchers who want to compete internationally for grants lack advanced grant writing skills.

**Teaching capacity:** The theoretical training in Niger is perceived to be adequate, while lacking practical training opportunities. Classrooms are poorly equipped with teaching equipment (e.g., a video projector), teaching aids and instructional materials. Student to teacher ratio is high, limiting the ability of lecturers to integrate student-focused approaches in the classroom and those of students seeking individual help from lecturers. The course curricula also need an upgrade.

### Organizational Capacity Development

**Laboratory management:** Good management of laboratories is a significant challenge. Compounded by understaffing, laboratory managers and technicians lack standard operating procedures to run functional labs. Poor laboratory practices that result in malfunctioning or deteriorating equipment are widespread. Laboratory staff are in dire need of training on how to run, maintain, and repair laboratory equipment as well as the general administrative duties associated with managing a lab. A simple, effective lab procurement system is also needed within organizations to expedite the purchase of lab supplies, reagents, and technical service for equipment. Frequent power shortages highlight the urgency to install backup power supplies in laboratories to ensure that lab equipment function properly, and analyses can be completed in a reliable manner (Fethiere and Ludgate, 2019).

#### Participating organizations in the HICD assessment studies in Niger

- **APESS:** Association for the Promotion of Livestock in the Sahel and Savannah
- **CNS-EL:** National Center for Specialization in Livestock
- **ESE:** School of Livestock Supervisors in Maradi
- **ICRISAT:** International Crops Research Institute for the Semi-Arid Tropics
- **INRAN:** National Institute of Agricultural Research of Niger
- **LABOCEL:** Central Laboratory of Livestock
- **MAAUN:** Maryam Abacha American University of Niger
- **MEL-CMB:** Livestock Multiplication Center
- **UAM:** University of Abdou Moumouni
- **UM:** University of Maradi

**Table 1: Skills Gaps in Research, Teaching, Extension, and Technical Areas**

Research Design & Methods	Teaching and Pedagogy	Extension
<ul style="list-style-type: none"> <li>Data analysis and modeling</li> <li><b>Grant writing and funding sources</b></li> <li><b>Molecular genetics techniques</b></li> <li><b>Research protocol development</b></li> <li><b>Scientific writing</b></li> <li><b>Monitoring and evaluation</b></li> </ul>	<ul style="list-style-type: none"> <li>Teaching and methodology</li> <li>Active learning</li> <li>Teaching aids and instructional materials</li> </ul>	<ul style="list-style-type: none"> <li>Extension information</li> <li>Extension material development</li> <li>Dissemination methods</li> <li>Leadership skills</li> <li>Establishing and strengthening rural organizations</li> <li>Strategic planning process</li> <li>Technology transfer process, framework and methodology</li> </ul>
Technical Areas		
<ul style="list-style-type: none"> <li>Agribusiness, market and value chain development</li> <li><b>Animal pathology and immunology</b></li> <li><b>Artificial insemination technologies (incl. semen processing)</b></li> <li><b>Clinical laboratory management</b></li> <li><b>Conservation of animal genetic resources</b></li> <li><b>Cross-breeding for milk production</b></li> <li><b>Current status of veterinary vaccines</b></li> <li><b>Differential diagnosis for tropical infectious diseases</b></li> <li><b>Epidemiology and disease diagnosis</b></li> <li><b>Emergency animal feed and feeding strategies for dry areas</b></li> </ul>	<ul style="list-style-type: none"> <li>Export certification of animal products</li> <li>Forage production and crop nutrition</li> <li>Gender and development</li> <li>Genetics (conservation genetics, consanguinity management)</li> <li>Intensification of animal/livestock production</li> <li>Molecular characterization</li> <li>New technologies in animal breeding</li> <li>Processing technologies for dairy products</li> <li>Valorization of indigenous animal breeds</li> </ul>	

**Information systems:** Livestock researchers and academic staff in Niger would benefit greatly from accessing a central repository for information. There is also a need for an information system that can facilitate the dissemination of research findings to support decision making and collaboration among academics, researchers and practitioners.

**Institutional relationships:** Linkages between the research institutions, universities, extension, and industry are weak. Most institutions are very hierarchical and rigid. Several key policy reforms are needed to incentivize and strengthen institutional relationships. For example, a joint research agenda at the national level can facilitate and support collaboration.

**Grant writing and management:** Challenges in winning and managing grants are common across research and academic institutions. Researchers at INRAN struggle with a heavy administrative load and are unable to purposively search for grants or write winning proposals. Researchers and lecturers also lack support from a centralized grants management-related infrastructure within their institutions (e.g., the Office of Research) that can help with seeking grant funding, developing a contract for the grant, budget development assistance, as well as managing grant awards in compliance with donor, institution and country regulations.

**Other issues:** Stads, Yacoba and Magne Domgho (2016) state that few postgraduate training programs are offered at national universities; most students graduate with BSc degrees. To pursue MSc or PhD degrees, students need donor



*HICD assessment visit in Niger (credit: Hartmann, 2018)*

funding, which is becoming scarce. Degree-granting institutions also need adequate funding and policy support at the national level to facilitate the growth of MSc and PhD programs.

## Enabling Environment

**Infrastructure and material resources base:** The research institutions and universities lack reliable infrastructure and material resources, particularly laboratories and experiment farms. For example, Fethiere and Ludgate (2019) state that while laboratories are adequately equipped, most of this equipment is idle because of minor malfunctions. Laboratories also lack a reliable supply of reagents and other consumables, as well as replacement parts for broken equipment. These issues compounded with laboratory management issues, discussed above, result in an inability of researchers and lecturers to conduct novel and/or quality research, and collaborate with local and international partners. In the long run, these limitations may have significant implications on animal health and, consequently, human health nationwide.

**Library systems and information technology:** The capacity of library staff is limited, and the library and information technology systems are inadequate. This pertains to infrastructure and materials, such as the lack of adequate computer facilities, high-speed internet, e-library tools, access to e-journals and distance education tools.

**Gender constraints:** Universities employ female researchers, but they usually occupy high administrative positions, leaving little time for research. Female students stressed the need for more opportunities to engage with established female researchers as role-models, hear about their pathway to a career in research, and learn how to find work-life balance.

**R&D investments and infrastructure:** According to Magne Domgho, Yacouba and Stads (2018), Niger's agricultural research spending as a share of agricultural gross domestic product is far below the recommended 1% target set by the New Partnership for Africa's Development and the United Nations in 2017. It stands at 0.32%. This is substantially lower than what is needed to support the growth of agricultural research, including livestock research, in the long run. Government funding should increase and fund adequately the salaries of research staff but also provide adequate resources to operate various research programs and maintain infrastructure and materials across research and academic institutions.

### The HICD team's primary recommendations:

To improve research capacity, organizations must address the linkages and gaps between:

- laboratory infrastructure, resourcing, and management,
- the skills of the researcher in research design, biostatistics, methods, and analyses (inclusive of modeling),
- policy and funding mechanisms at the national level, and
- the research and extension connection.

## Recommendations

- Human**
- Improve the capacity of researchers and laboratory technicians to manage laboratories, appropriately use laboratory equipment, and analyze results from laboratory tests.
  - Conduct short-term training to improve research capacity with a particular focus on the "research package" including design, analysis, statistics, modeling, and interpretation; grant and scholarly writing; modern technologies and innovations.
  - Develop a Train-the-Trainer program with a series of trainings. Each training should be at least 3-5 days in length with sessions scheduled 2-3 months apart.
  - Strengthen training for animal health and veterinary services auxiliary providers. This training should focus on development of the skills of the community-level animal health care providers who are frequently the only animal health care providers in rural and remote communities.

<b>Organization</b>	<ul style="list-style-type: none"> <li>• Foster an organizational culture that facilitates research and technical skills development.</li> <li>• Develop an information sharing system to promote research collaboration and facilitate information dissemination to various stakeholders, including the private sector.</li> <li>• Develop a new cadre of forage professionals, technicians and other staff.</li> <li>• Increase partnerships between academic and research institutions and strengthen linkages by involving the private sector.</li> </ul>
<b>Environment</b>	<ul style="list-style-type: none"> <li>• Promote policies that strengthen the cross-institutional collaboration to jointly set research priorities or apply for funding.</li> <li>• Strengthen cooperation with key international research networks through leveraging scarce human, social and physical resources.</li> <li>• Increase access to low-cost resources including assistance with accessing journals and expanding e-library resources across academic and research institutions.</li> </ul>

## Reference List

- Fethiere, R., and Ludgate, N. 2019. Report on the Assessment of Forage and Non-Forage Laboratories in Niger. Gainesville, FL, USA: Feed the Future Innovation Lab for Livestock Systems.
- Magne Domgho, L. V., Yacouba, B., et Stads, G.-J. 2018. *Niger: Finche d'information sur les indicateurs de la R&D agricole*. Washington, DC: Agricultural Science and Technology Indicators (ASTI) and International Food Policy Research Institute (IFPRI). <https://www.asti.cgiar.org/sites/default/files/pdf/Niger-Fr-Factsheet-2018.pdf>
- Stads, G.-J., Yacoba, B., and Magne Domgho, L. V. 2016. Niger: Agricultural R&D Indicators Factsheet. Washington, DC: Agricultural Science and Technology Indicators (ASTI) and International Food Policy Research Institute (IFPRI).

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