In 2021, 12 CGIAR Research Programs (CRPs) and four CGIAR Platforms came to a close. This summary report presents an overview of the work of the CGIAR Research Program on Livestock (LIVESTOCK) between 2017 and 2021 and highlights its key achievements over this five-year period.
Overview

LIVESTOCK provided research-based solutions to help smallholder farmers, pastoralists, and agro-pastoralists transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It aimed to increase the productivity and profitability of livestock agrifood in low- and middle-income countries (LMICs).

**LIVESTOCK consisted of five flagships:**

1. **Livestock genetics**, which ensured that appropriate livestock breeds are readily available, affordable, and widely used by women and men livestock keepers in LMICs.

2. **Livestock health**, which worked toward improving livestock health and health service delivery, with research conducted to ensure animal welfare.

3. **Livestock feeds and forages**, which increased livestock nutrition by identifying, testing, and delivering superior feed and forage strategies and options.

4. **Livestock and environment**, which reduced the environmental footprint of livestock production across both rapid and fragile growth trajectories, while ensuring that livestock systems in LMICs were able to adapt to global environmental changes.

5. **Livestock livelihoods and agrifood systems**, which maximized livestock-mediated livelihoods and resilience to risk among smallholder and pastoral producers and their communities, while enhancing availability and access to animal-source food for rural and urban consumers.

Each flagship featured research on gender and young people with a strategic research agenda addressing issues of gender and social equity in the flagship on livestock livelihoods and agrifood systems. Capacity development — both capacity to undertake livestock research and to use research results — was integral to the program’s theory of change, as were innovative approaches to communication.

LIVESTOCK work spanned across Africa, the Middle East, Southeast Asia, and South and Central America (Figure 1). Four priority countries were selected to demonstrate how technological and institutional innovations can be integrated into real-life interventions.

**In Ethiopia**, LIVESTOCK unlocked the potential of small ruminants through the development of equitable, sustainable, and efficient sheep and goat value chains.

**In Tanzania**, LIVESTOCK catalyzed uptake of dairy technology packages through institutional approaches that involved inclusive agribusiness models for improved livelihoods of smallholders and environmental sustainability.

**In Uganda**, LIVESTOCK developed and tested an environmentally sustainable and gender-inclusive integrated intervention package that aimed to improve pig productivity and incomes of value chain actors.

**In Vietnam**, LIVESTOCK worked toward identifying, testing, and evaluating appropriate livestock and livestock-related interventions to address sustainable intensification challenges for ethnic minorities in the northwest region of the country.
Between 2017 and 2021, LIVESTOCK reported contributions to nine of the United Nations’ Sustainable Development Goals (SDGs), with the most contributions tagged to SDG2, zero hunger (76%) (Figure 1).

LIVESTOCK reported contributions primarily to CGIAR’s System Level Outcome 1 (SLO1), set out in the CGIAR Strategy and Results Framework 2016–2030 — with notable contributions to the adoption of feed and forage grasses to reduce poverty. Overall, 13 SLO contributions were reported between 2017 and 2021 (Figure 2).

The content in this section is drawn from the LIVESTOCK Annual Reports, which are included in the Resource section of this Summary Report. The complete list of LIVESTOCK achievements can be found on the CGIAR Results Dashboard.
From 2017–2021, LIVESTOCK reported achievements primarily in South Asia (21%) and East and Southern Africa (16%). In addition, 43% of LIVESTOCK’s reported achievements were global and 3% were regional.
Adoption of tropical forage grasses

In 2017, LIVESTOCK reported that the total area sown with CGIAR Brachiaria (syn. Urochloa) hybrids (forage grasses), which were distributed by the primary commercial seed sector partner, had increased by 103,000 hectares in 23 countries. The global acreage for these hybrids had nearly doubled since 2013 and was estimated to be 829,000 hectares in more than 30 countries. In a separate study of five Latin American countries, the total area planted with improved CGIAR Brachiaria varieties (including hybrids) was estimated to be about 3.9 million hectares.

From 2018 to 2021, Urochloa hybrids were scaled significantly through the commercial partner in more than 30 countries, with the highest areas planted being in Latin America, Asia, and Africa. In 2019, the total area sown with LIVESTOCK hybrids was estimated to be more than 950,000 hectares. By 2021, the total area planted had been scaled to more than 1,230,000 hectares.
GENDER

In 2017, LIVESTOCK research explored the connection between women’s empowerment and household food and nutrition security. Research was also initiated on gender at the landscape level through engagement of the gender team in the development of national livestock master plans.

In 2018, the Women’s Empowerment in Livestock Index (WELI) was published and gained ground as a way for projects to understand how livestock is empowering women. Also in 2018, LIVESTOCK worked closely with partners on the Livestock Master Plan of Bihar, which aimed to guide investment in the livestock sector and integrate women’s needs in the plan.

In 2020, a Women’s Empowerment in Livestock Business Index (WELBI) tool was developed to assess changes in the empowerment of women involved in livestock business.

In 2021, guidelines were developed and piloted to better incorporate gender considerations into the highly successful Participatory Rangeland Management toolkit. These guidelines have been piloted in Baringo County, Kenya, and will be taken up and used in both an existing regional bilateral project funded by the World Bank (Accelerating the Impact of CGIAR Climate Change Research in Africa) and the new One CGIAR initiative on Livestock, Climate and System Resilience (LCSR).

For the complete list of gender achievements, refer to the LIVESTOCK Annual Reports included in the Resource section of this Summary Report.
Key Challenges and Risks during Implementation of LIVESTOCK

**KEY CHALLENGES**

**Variance from planned programs and activities**

Throughout the course of the program, LIVESTOCK reassessed its priorities and focus as a result of changing circumstances, opportunities, and challenges. Notable adjustments and pivots included the following:

- Enabling CGIAR genetic laboratory capacity in Kenya to support national and regional COVID-19 testing and variant monitoring.
- Expanding ex-ante assessment work to determine the potential economic impacts of the adoption of a new forage variety in Colombia and align barley breeding within forage breeding programs.
- Expanding work on rangeland management to include more gender dimensions in response to partner interest.
- Dropping a planned cost-benefit analysis in Nicaragua in 2018 because of political unrest.
- Including barley breeding for feed/forage from 2019 to complement ongoing forage grass breeding programs.
- Expanding the small ruminant reproductive platform to more sites in Ethiopia at the request of national partners in 2019.
- Conducting research on two zoonotic tick-borne diseases representing a major global public health threat: Crimean-Congo hemorrhagic fever in dromedaries and tick-borne encephalitis in sheep.
- Consolidating research on soil carbon in rangelands, silvopastoral, and mixed crop-livestock systems to understand their role in greenhouse gas emissions.
- Increasing resources for the Women’s Empowerment in Livestock Index (WELI) given support and demand for the index.

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4 The content in this section is drawn from the LIVESTOCK Annual Reports, which are included in the Resource section of this Summary Report. These Reports contain a complete list of challenges and risks.
Key Challenges and Risks during Implementation of LIVESTOCK

**Institutional risks**

- **CGIAR funding arrangements and effects on the involvement of external partners.** To address this, LIVESTOCK negotiated exceptions to standard CGIAR financial policies given low financial risk associated with external partners, thereby enabling their continued involvement.

- **Erosion of the synergies achieved in capacities across LIVESTOCK’s partners.** A CRP-wide meeting was held to reinforce researcher identification with the LIVESTOCK agenda, highlighting the benefits of collaboration.

- **One CGIAR transition.** LIVESTOCK held a team meeting in mid-2020 to strengthen its commitment to developing a well-managed closure strategy that would ensure a smooth transition to the new programmatic modality. It devoted resources and efforts to support flagships in developing syntheses and communication outputs for their “legacy products” and facilitating sensitization of stakeholders about the strategic value of ongoing research activities, many in the form of “golden eggs.”

**Programmatic risks**

- **Difficulties in adequate resourcing for priority countries** was mitigated by reducing the number of priority countries from nine to four.

- **Early termination of LIVESTOCK in 2021.** LIVESTOCK undertook a full program review of flagship plans to 2021, adjusting outcomes and targets. Implementing partners agreed that their institutions would protect the CRP investment in priority countries. LIVESTOCK also analyzed the potential of planned research efforts to bridge into the post-CRP phase.

- **Not completing activities before the portfolio ends.** LIVESTOCK provided increased support for planning for 2021 and increased the intensity of monitoring progress.

**Contextual risks**

- **Uncertainty regarding Window 1 (W1)/Window 2 (W2) funding was mitigated by reallocating most of LIVESTOCK’s Strategic Investment Fund to cover shortfalls in W1/W2 funding.**

- **Lack of Window 1 (W1)/Window 2 (W2) funding for two flagships.** In response, LIVESTOCK identified priority work in areas that could be conducted as strategic CRP-wide activities.

- **Implementation of the Nagoya Protocol (2010) on access and benefit sharing, subjecting cross-boundary movement of biological materials to import and export permits.** To mitigate this, LIVESTOCK engaged more closely with national partners.

- **Insecurity in Ethiopia, Nicaragua, Burkina Faso, and Mali.** Teams adapted their plans. In Nicaragua, for example, activities were decentralized and were coordinated with local rather than national authorities, with some activities moved to Colombia.

- **COVID-19-related risks.** To address continued travel restrictions, LIVESTOCK relied more on national partners and onsite consultants. Some 2021 deliverables had to be cancelled because of restrictions on fieldwork, but researchers were redeployed to finalizing publications and “legacy products.”

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4 The content in this section is drawn from the LIVESTOCK Annual Reports, which are included in the Resource section of this Summary Report. These Reports contain a complete list of challenges and risks.
1. **SPHERE OF CONTROL**

   Outputs
   - **55,021** People Trained
   - **930** Peer reviewed papers
   - **195** Milestones
   - **801** Innovations

2. **SPHERE OF INFLUENCE**

   Outcomes
   - **22,375**
   - **32,646**

3. **SPHERE OF INTEREST**

   Impact
   - **13 SLOs**
   - **9 SDGs**

**Partnerships**

The figures in this report reflect reporting valid as of July 21, 2022.
Bundling animal health services to increase access to quality services for pastoralists – 2017

Access to animal health services is one of the most important factors in improving livestock productivity. LIVESTOCK piloted bundling services by public and private sectors during vaccination campaigns. In two counties in Kenya — Garissa and Marsabit — it is now routine for the government to invite private sector actors to provide additional services, while the government provides vaccinations. This arrangement has saved the government money, increased business opportunities for the private sector, and provided quality services to pastoralists at affordable prices.

Improved cattle feeding practices in nine Kenyan counties results in increased milk productivity – 2018

Feed is a key constraint to milk production. LIVESTOCK developed a simple rapid assessment tool, the Feed Assessment Tool (FEaST), and together with farmers in Kenya, five Brachiaria grass varieties were identified as suitable. From 2015-2018, the U.S. Agency for International Development (USAID) -funded Accelerated Value Chain Development (AVCD) project aimed to support the dairy sector in nontraditional dairy regions of Kenya. The program facilitated the dissemination of improved fodder technologies, including Brachiaria varieties in 10 counties, and achieved a total of 18,064 hectares of improved fodder varieties. Nearly 80,000 farmers applied improved technologies or management practices (including feed, animal health and breeding). Adoption of the improved fodder variety, together with other management practices, resulted in increased milk production and productivity.

Government of Tanzania adopts joint village land use planning to increase tenure security for livestock keepers – 2019

In Tanzania, all villages are required by law to produce a village land use plan. However, the majority of villages have not done so because of a lack of capacity and resources. LIVESTOCK and partners, including the Government of Tanzania, piloted joint village land use planning (JVLUP) to protect shared resources, including grazing lands for local livestock keepers, in four clusters of villages covering 175,000 hectares of grazing land.
The JVLUP has resolved conflicts between land users, improved access to resources for women and men, and laid a strong foundation to strengthen rangeland management. The government has since decided to scale up JVLUP across 22 villages in five districts, involving almost 13,000 households (69,555 people) over 30,000 hectares.

**Communities engage in participatory rangeland management across East and Southern Africa** – 2020

The practice of participatory rangeland management (PRM) is expanding across East and Southern Africa. By 2020, eight fully functional rangeland management institutions had been established in Kenya and Tanzania, with almost 45% female representation. LIVESTOCK provided technical support to the Piloting of PRM project and supported policy dialogue in national and regional governments. In 2020, a new U.S. Agency for International Development (USAID)-funded project invested US$24 million to scale up the PRM approach in Afar, Oromia and Somali regions, Ethiopia, through the Resilience in Pastoral Areas project, benefiting 178,000 households, with interventions to be led by CARE Ethiopia between 2020 and 2025.

**Adoption of spineless cactus pear by 7,000 smallholder farmers in Jordan and India as a multipurpose crop for enhanced resilience and increased household income** - 2021

The cactus pear (*Opuntia ficus-indica*) has attracted global attention because of its successful adaption to drought and low soil fertility, its capacity to grow with minimal cost and inputs, and the multiple food, livestock feed, and livelihood benefits generated from the fruit and cladodes. Research, advocacy, and trainings on spineless cactus pear across South and West Asia by ICARDA and partners has led to rapid adoption by smallholder farmers, who are benefiting from greater income. Support from governments, national agricultural research systems, non-governmental organizations, private sector, and universities is amplifying efforts.

The complete list of reported LIVESTOCK impacts can be found on the CGIAR Results Dashboard.
From 2017–2021, LIVESTOCK had $225.67 million in total funding, including the use of Center funds ($2.06 M). Over this period, Windows 1&2 represented 37% of funding, Window 3 represented 31%, Bilateral represented 31%, and Center funds represented 1% (Figure 4).

The CRP’s top funders (Figure 5) include the CGIAR Trust Fund, the United States of America, and the Bill & Melinda Gates Foundation. LIVESTOCK was primarily implemented by ILRI, with participation from ICARDA and CIAT (Figure 6).

5 The content in this section is drawn from CGIAR’s annual Finance Reports.
In 2020, the CGIAR Advisory Services (CAS) Secretariat Evaluation Function Coordinated Independent Evaluative Reviews of Each of the 12 CRPs. Below is a selection of key findings from the Livestock Review.

Quality of science

Livestock engaged an appropriate range of skills. Achieving an appropriate level of staff and partner diversity was challenging. Generally, the funding for the CRP was sufficient, except for the hiatus in Flagship 3 and 5 funding, which threatened crucial long-term, longitudinal research.

Livestock produced a high volume of research outputs of mostly good, and some excellent, quality. Although some approaches were resource intensive, an in-depth review of a sample of 34 physical output products largely showed relevance to next-stage users. Most quality-of-research-for-development elements necessary for scientific credibility and legitimacy were in place. Yet there was inconsistent application (such as ethics) or need for better development (such as conduct or early career researcher support).

Importance of outputs and outcomes

There was a commendable shift toward more farmer-driven, inclusive, and systematic approaches in the more heavily science-focused flagships. All flagships pointed to significant achievements notwithstanding delays and shifts in priorities. CRP and flagship management adapted to changing circumstances. Management was comparatively less effective in promoting cross-flagship coordination and learning. The priority country programs were promising.

The theories of change (ToCs) were of acceptable quality, but overly ambitious. Planning and reporting were not structured around outputs and outcomes as described in the ToCs, and the suite of metrics present in 2019 failed to provide a coherent overview of progress.

Mechanisms for achieving sustainability

All flagships made significant achievements. The inevitable pull to carry out new research needed to be counterbalanced by a push to build on the promising areas of CRP research and extrapolate lessons to inform the future direction of work. Insufficient resources for country-specific work, and the limited timeframe to address priority country programs, raised concerns that achieving impact through an integrated approach was unrealistic by the end of 2021.

Based on the experience of Livestock, the CAS evaluation offered the following lessons:

• A longer-term vision, better aligned with next-and end-user priorities and based on early engagement, would ensure that the One CGIAR vision becomes a reality. This way, innovations are likely to be taken up, and tracking of the impact of applied innovations is easier.

• At an early stage, engagement and dialogue with in-country donors and a more systematic approach to private sector engagement (such as discovery) might foster wider impact.

• Funding for priority areas must be secured over the long term, using a multi-annual perspective.

• Local anchoring through local science is key to success and sustainability. Clear and measurable targets for engagement and capacity building of national scientists are needed to create clear exit strategies.

7 The content in this section is drawn from CGIAR Research Program 2020 Reviews: Livestock.
Resources

LIVESTOCK Annual Report 2017
LIVESTOCK Annual Report 2018
LIVESTOCK Annual Report 2019
LIVESTOCK Annual Report 2020
LIVESTOCK Annual Report 2021

CGIAR Annual Performance Report 2017
CGIAR Annual Performance Report 2018
CGIAR Annual Performance Report 2019
CGIAR Annual Performance Report 2020
CGIAR Annual Performance Report 2021

CGIAR RESULTS DASHBOARD
CGIAR FINANCIAL REPORT DASHBOARDS