



Advisory
Services



CGIAR Research Program 2020 Reviews: Livestock

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26 October 2020

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Correct citation: CAS Secretariat (CGIAR Advisory Services Shared Secretariat). (2020). CGIAR Research Program 2020 Reviews: Livestock. Rome: CAS Secretariat Evaluation Function. <https://cas.cgiar.org/>

Cover image: Cattle, Ethiopia. ILRI/Stevie Mann

Design and layout: Luca Pierotti and Macaroni Bros

CGIAR Research Program 2020

Reviews: Livestock

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Acknowledgments

This evaluation was prepared by a team led by Karen McHugh, providing senior evaluation expertise, and Ben Bennett, the subject matter expert.

The two-person team worked under the overall direction of Allison Grove Smith, Director, CGIAR Advisory Services Shared Secretariat (CAS Secretariat). These reviews are being led by Svetlana Negroustoueva, CAS Secretariat Senior Evaluation Manager, with support from Angela Gimenez Barrera. Ravi Ram, Senior Evaluation Consultant to CAS Secretariat, managed the first cohort of three CRP 2020 Reviews: A4NH, GLDC, and WHEAT. Angela Giménez Barrera provided evaluation and coordination support for the review process. Paolo Sarfatti served as senior advisor to the evaluative reviews project 2020. Gaia Gullotta and Max Runzel provided analytical support. Derek Baker served as a peer reviewer of the preliminary findings and final report.

CAS/Evaluation and the review team gratefully acknowledge the Livestock CRP Team and the CGIAR System Organization for their support: Julien Colomer and Hector Tobon.

CAS Disclaimer

By design, the CGIAR Results Dashboard was a key source of data for the 2020 CRP Reviews. During the pilot phase of the CRP Reviews, issues with interoperability and resulting data quality between the management information systems (CLARISA and the Dashboard) and extracts from CRP systems (MARLO and MEL) were discovered. For harmonization, CAS engaged with the MARLO team and the CRP MEL focal points to conduct data cleaning and pre-analysis for CRP review teams. This exercise revealed the limitations of CGIAR's reporting/repository systems for evaluation purposes; these limitations were mostly due to changing reporting requirements and discrepancies in whether CRPs adopted MARLO or MEL systems. Moreover, in the case of peer-reviewed journal articles, the protocol used by the CRP review teams to identify relevant publications differed from the guidance applied by CRPs (the CRP review teams' bibliometric analysis used only publications indexed by International Scientific Indexing [ISI], available through Web of Science). Therefore, CAS acknowledges discrepancies between the CGIAR Results Dashboard, and the data provided to the Review teams for their analysis, which should not be seen as a factor having influenced the analysis by the CRP review teams.

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Annexes are available here:

bit.ly/LIVESTOCK-CRP2020-Annex

A 2-page brief is available here:

bit.ly/LIVESTOCK-CRP2020-Brief

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Abbreviations

A4NH	Agriculture for Nutrition and Health
ABS	Access and benefit sharing
AR	Annual report
ASF	Animal-source food
CapDev	Capacity development
CAS	CGIAR Advisory Services
CIAT	International Center for Tropical Agriculture
CoA	Cluster of activities
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CRP	CGIAR Research Program
CRR1	Common results reporting indicator
FGD	Focus group discussion
FP	Flagship Program
FTE	Full-time equivalent
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GmbH)
GLAD	Global Livestock Advocacy for Development
ICARDA	International Centre for Agricultural Research in the Dry Areas
ILRI	International Livestock Research Institute
IDO	Intermediate Development Outcome
IPG	international public good
ISC	Independent Steering Committee
ISI	International Scientific Indexing
KLIP	Kenya Livestock Insurance Program
LMP	Livestock Master Plan
MARLO	Managing Agricultural Research for Learning and Online Platform
M&E	Monitoring and evaluation
MEL	Monitoring, Evaluation, and Learning platform
MELIA	Monitoring, evaluation, learning, and impact assessment
NARS	National agricultural research system
NGO	Nongovernmental organization
OICR	Outcome Impact Case Report
OP	Output
PIM	CGIAR Research Program on Policies, Institutions, and Markets
POWB	Plan of work and budget
PMC	Program Management Committee
PMU	Program Management Unit
QoR4D	Quality of research for development
REF	Research Excellence Framework, United Kingdom
RTB	CGIAR Research Program on Roots Tubers and Bananas
SBCC	Social and behavioral change communication
SIF	Strategic Investment Fund
SLO	System-Level Outcome
SLU	Swedish University of Agricultural Sciences
SMART	Specific, Measurable, Achievable, Relevant and Timebound
ToC	Theory of change
ToR	Terms of reference
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WEAI	Women's Empowerment in Agriculture Index
WELI	Women's Empowerment in Livestock Index
WPLUP	Woreda participatory land-use planning

Executive Summary

Background and Context of CRP

The overall goal of the Livestock CRP (hereafter referred to as the CRP) is to create a well-nourished, equitable, and environmentally healthy world through livestock research for development, which in turn requires action in five interacting areas: the genetic potential of the animals kept, their nutrition, their health, their interaction with the environment, and a range of surrounding socioeconomic conditions. Each of these is the subject of a specific Flagship Program (FP).

Purpose and Scope of the CRP 2020 Review

Given the compressed time frame, the review was limited to assessing two of the six CGIAR evaluation criteria: (1) quality of science and (2) effectiveness. CGIAR defines quality of science as the ways in which research is designed, conducted, documented, and managed in terms of processes, inputs, and outputs. CGIAR's definition of effectiveness refers to the extent to which objectives have been achieved; it aligns with the definition of the Organisation for Economic Co-operation and Development's Development Assistance Committee (OECD-DAC) and other international bodies. To provide an opportunity for the program under review to generate insights about their research contexts and programs of work, including lessons for future CGIAR research modalities, a third criterion was included: future orientation. In line with these three criteria, the review team addressed the following questions:

1. Quality of science: To what extent does the CRP deliver quality of science, based on its work from 2017 through 2019?

2. Effectiveness: What outputs and outcomes have been achieved, and what is the importance of those identified results?

3. Future orientation: To what extent is the CRP positioned to be effective in the future, seen from the perspectives of scientists and of the end users of agricultural research (such as policymakers, practitioners, or market actors)?

Approach and Methodology for the Review

The review team used a mixed-methods approach, drawing on available quantitative and qualitative data from both internal sources (CRP) and external sources (such as partners and next users). A sample of 15 journal articles and 11 technical publications representing all FPs, all years, and, as far as possible, all cross-cutting issues were reviewed in depth against quality of research for development (QoR4D) criteria. Thirty-five physical products and 10 communication products of various types (blogs, posters, newsletters, and flyers) were also assessed. The CAS Secretariat provided bibliometric analysis derived from dashboard data, and this allowed assessment of individual articles, journal quality and access, h-indices of researchers, and Altmetrics. The review team conducted 48 individual interviews and two focus group discussions (FGDs)—one with the five members of the Independent Steering Committee (ISC) and one with a group of eight junior researchers—bringing the total number of people interviewed to 61. Two Outcome and Impact Case Reports (OICRs) were selected for deep dives:

- #2767: Improved cattle feeding practices in nine Kenyan counties, resulting in increased milk productivity for close to 80,000 farmers, with likely improved income and livelihoods
- #3164: Adoption of woreda participatory land-use planning (WPLUP) in pastoral areas by the Government of Ethiopia

Key Findings and Conclusions

Quality of Science

The CRP has an appropriate range of skills but achieving an appropriate level of staff and partner diversity continues to be a challenge.

The CRP had sufficient funding to undertake its actions, although the hiatus in FP3 funding threatened crucial longitudinal research efforts whose time span exceeds that of the CRP.

The CRP produces a high volume of research outputs of mostly good, and some excellent, quality. Outputs are largely relevant to next-stage users, although some approaches are resource intensive.

Most elements necessary for scientific credibility and legitimacy are in place, but some are inconsistently applied (e.g., ethics) or not well developed (e.g., conduct, early career researcher support).

Effectiveness

All FPs have shown some good progress and achievements, but there have been delays and shifts in priorities that give cause for concern.

It is challenging to assess the achievement of planned outputs and outcomes as neither planning nor reporting is structured around outputs and outcomes as described in the theories of change (ToCs), and the current suite of metrics fails to provide a coherent overview of progress.

OICRs provide narratives on the long-term impact of scientific and technical innovation, but they also demonstrate that it is not sufficient to just deliver the science; it is also essential to ensure sufficient resources, both financial and human, to allow that science to deliver on development objectives.

CRP and FP management have adapted to changing circumstances, but they are not effective in promoting cross-FP coordination and learning. The priority country programs are promising on a number of fronts, though they are still in the early stages of development.

The quality of ToCs is acceptable but could be improved to make them more useful; overly ambitious, they reflect the broader problem of trying to capture the long-term process of going from basic research to applied science or technology delivery, to the improved well-being of smallholders. They have evolved over time to take account of changes in contexts, emerging opportunities, and limitations.

In the case of the cross-cutting themes:

- Much **capacity development** activity was observed, but the degree to which this is impactful or strategic is hard to discern.
- The CRP may have missed an opportunity to set the agenda on **climate change** by collating evidence from all the relevant FP outputs.
- Integration of **gender** has improved over time, with some strong achievements, but there is still work to be done.
- Although **youth** is a stated CRP priority, there is little evidence this is the case in practice.

Future Orientation

All FPs can point to significant achievements. The inevitable pull to carry out new research needs to be counterbalanced by a push to build on the promising areas of research addressed by this CRP and to extrapolate lessons to inform the future direction of work. Insufficient resources and the limited time frame of the priority country programs, which have been further disrupted by COVID-19, raise concerns that achieving impact through an integrated approach is unrealistic within the remaining time frame.

Recommendations

For the CRP: CRP quality managers need to ensure that 100 percent of peer-reviewed research outputs are open access (where commercially possible) and in ISI-indexed journals.

The CRP should improve the content and consistency of communications products and ensure a clearer association of content with research aims.

To the extent possible, FP achievements should be pushed to the next level within the remaining time frame—e.g., innovations currently at level 2 should be pushed to level 3, and policies at level 1 should be pushed to level 2.

Exit strategies need to be developed immediately to ensure the smooth continuation of the country programs. Useful lessons from the “Cross-Country Learning Week” should be widely disseminated.

The CRP should conduct a strategic review of capacity development to provide clear guidance on its aims and on its relationship with other key actors—such as national universities and national agricultural research systems (NARSs)—in achieving these aims. It should review its targets for capacity development, determine how it will measure progress, and align its efforts with national-level needs.

For postgraduate students, pooling resources between centers and CRPs to create doctoral training colleges with clear learning structures and research themes/aims would benefit student experience and build a future cadre with a sense of identity aligned to the overall aims of the system.

Regarding the future research modality: Demonstrable measurement of and improvement in the research quality of partner organizations should be an explicit and measurable aim.

Inter- and multi-disciplinary approaches should receive greater emphasis in future working arrangements among staff and partners.

In addition to gender data, the new research modality should collate and share data on other aspects of diversity among the CRP workforce and research outputs, including ethnicity.

The new research modality might consider applying ToCs to local and project-level users to encourage uptake of the approach and inclusion of a wider set of actors and agendas in research design and application for impact.

Dedicating additional time and resources to develop high-quality ToCs would ensure their usefulness throughout the program life cycles. The CRP should develop a robust and relevant system of ToC-linked indicators to map the progress of future CG programs. Planning and reporting documents (plans of work and budget [POWBs] and annual reports [ARs]) should be synchronized.

Programs should engage early with potential funders and suitable private sector partners to ensure scaling once an innovation is delivered.

The new CRP structure should maintain the country-coordinated approach, but with additional resources. The focus on learning and sharing of that learning should be reinforced and extended to other countries.

The strong achievements in integrating gender into CGIAR work should not be lost. CGIAR should consider reinstating the requirement that 10 percent of the budget be reserved for gender-related work and that a viable and effective gender strategy be in place before any funding is received, as well as maintaining the inclusion of gender focal points within each FP (or whatever form new CRPs take).

For CGIAR: CGIAR should clearly define "junior researcher," set up programs to support and mentor underrepresented groups and develop a cadre to maximize the value of this group.

A consistent and well-understood research misconduct policy is needed to address the potential for inappropriate research behavior or abuse of power. CGIAR needs a systemwide approach to research ethics, with standard codes of conduct and approaches as well as mandatory training for all research staff and managers. It should set an example to set standards for research partners. A transparent ethics accreditation system (e.g., a flag or mark) applied to all center outputs would help improve compliance.

If an appropriate balance of gender, age, and ethnicity among researchers and staff is a CGIAR aim, then data on these parameters should be collected and put in the public domain.

The quality of technical publications and physical products and, therefore, impact could be improved by a more open, rigorous, systematic, and transparent peer to peer approach to review (beyond line managers and principal investigators). A system of indicating how these products have been reviewed would demonstrate CGIAR's commitment to quality control and continuous improvement.

More consideration needs to be given to learning, both through improved reporting systems and more independent impact assessments and evaluation studies.

The CGIAR role in the continuum from basic research to impact on smallholders on the ground needs clarity. A longer-term vision, better aligned with next- and end-user priorities, and a more multidisciplinary approach and broader spectrum of actors including the private sector is needed.

1 Background to the CRP 2020 Review

1.1 Purpose and Target Audience of the Review

According to the terms of reference (ToR), the primary purpose of the CRP 2020 Reviews is “to assess the extent to which CGIAR research programs are delivering **Quality of Science** and demonstrating **Effectiveness** in relation to their own Theories of Change (or other planning documents stemming from the ToC set out in the approved CRP proposal, in the event that the original ToC has not been updated to reflect the current thinking behind the CRP’s work).” Within that primary purpose, the objectives of the independent CRP Reviews are defined as the following:

- To fulfill CGIAR’s obligations around accountability regarding the use of public funds and donor support for international agricultural research
- To assess the effectiveness and evolution of research programs’ work under CRP 2017–2021
- To provide an opportunity for programs under review to generate insights about their research contexts and programs of work, including lessons for future CGIAR research modalities.

The target audience of the Reviews is identified as the CGIAR System Council, CRP management, staff, and partners.

1.2 Overview of the CRP and Its Context in Research for Development

The Livestock CRP provides research-based solutions to help smallholder farmers, pastoralists, and agro-pastoralists, among others, transition to sustainable, resilient livelihoods and to productive enterprises that will help feed future generations. It builds on the work of the previous Livestock and Fish CRP (L&F CRP) and aims to increase the productivity of livestock agri-food systems in sustainable ways, making meat, milk, and eggs more available and affordable across the developing world. The overall goal¹ of the Livestock CRP is to create a well-nourished, equitable, and environmentally healthy world through livestock research for development, which in turn requires action in five interacting areas: the genetic potential of the animals kept, their nutrition, their health, their interaction with the environment, and a range of surrounding socioeconomic conditions. Most of these areas have formed the basic components of livestock research. Under the current CRP, two areas have been strengthened. The first is the intersection of livestock with the environment, recognizing that the performance of livestock systems is threatened if interactions with the environment are not addressed and ensuring that the opportunity to mitigate environmental damage through livestock is not missed. The second is the recognition that if food and nutritional security for the poor are to be addressed, the traditional supply perspective of agricultural research needs to be complemented by increased consideration of the consumer-demand side and of how livestock agri-food systems can better serve food and nutritional security. Each of these goals is the objective of one of the five CRP Flagship Programs (FPs).

The Livestock CRP’s five specific goals are to:

1. Ensure that appropriate livestock breeds are readily available, affordable, and widely used by poor women and men livestock keepers
2. Improve livestock health and health service delivery
3. Increase livestock nutrition by identifying, testing, and delivering superior feed and forage strategies and options
4. Reduce the environmental footprint of livestock production across both rapid and fragile growth trajectories, while ensuring that livestock systems in target countries are able to adapt to global environmental changes
5. Maximize livestock-mediated livelihoods and resilience to risk among smallholder and pastoral producers and their communities, while enhancing availability of and access to animal-source food for rural and urban consumers.

¹ This overall goal is described in the full project proposal.

The theory of change (ToC) underpinning the Livestock CRP describes how increases in livestock productivity brought about by technological interventions in livestock genetics, health, and feeds, combined with integrated solutions and enabling conditions (markets, policies, incentives), will contribute to the CGIAR system-level outcomes (SLOs) of (1) reduced poverty, (2) improved food and nutrition security for health, and (3) improved natural resource systems and ecosystem services. The CRP aims to develop and deploy research-based solutions that will drive the transition of smallholder producers, value chain actors, consumers, pastoralists, and agro-pastoralists from near subsistence to productive small-scale enterprises and/or resilient livelihoods. Research outputs will derive from the five areas of research described above and rely on enabling actions embodied in the cross-cutting themes of gender, youth, and capacity development to achieve impact at scale. The research solutions developed will reflect, and in some cases cut across, sets of challenges associated with the so-called rapid inclusive growth and fragile growth trajectories. Inclusive growth supports sustainable intensification and addresses nutrition and poverty through increased input supplies, productivity, and income, together with the generation of ancillary business opportunities. Fragile growth focuses on enhancing the role of livestock in strengthening household and ecosystem resilience, protecting livelihoods, and improving nutrition in poor households. The next users of research outputs targeted by the CRP are grouped as follows:

1. National and international research and development systems
2. Consumers, markets and enterprises, and private-sector actors
3. Production systems, individual producers, and communities
4. Policymakers.

In terms of geographic scope, work initially focused on earlier research clusters and priorities² in Burkina Faso, Ethiopia, India, Kenya, Nicaragua, Tanzania, Tunisia, Uganda, and Vietnam but is now limited to four of these countries (Ethiopia, Tanzania, Uganda, and Vietnam). The CRP adopted a value chain and farming systems approach in priority countries in dryland and humid tropics but later placed additional emphasis on poultry, ruminants, and pigs, reflecting the focus on the role of livestock in livelihoods and nutrition at a smaller scale and a greater focus on gender. The Program brings together five core partners: the International Livestock Research Institute (ILRI), with a mandate on livestock; the International Center for Tropical Agriculture (CIAT), which works on forages; the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants and dryland systems; the Swedish University of Agricultural Sciences (SLU), with expertise in animal health and genetics; and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), which connects research, innovation, and scaling processes, though this role has not materialized as envisaged.

1.3 Scope of the Review and Review Questions

In line with the TOR, the Review is limited to assessing two of the six CGIAR evaluation criteria: (1) quality of science (QoS) and (2) effectiveness. According to the CGIAR Evaluation Policy, CGIAR defines quality of science as the way in which research is designed, conducted, documented, and managed in terms of processes, inputs, and outputs. CGIAR's definition of effectiveness refers to the extent to which objectives have been achieved and aligns with that of the Organisation for Economic Co-operation and Development's Development Assistance Committee (OECD-DAC) and other international bodies. To provide an opportunity for the Program to generate insights about research contexts and programs of work, including lessons for future CGIAR research modalities, a third criterion was included: future orientation. In line with these three criteria, the review teams addressed the following questions:

1. Quality of Science

1. To what extent does the CRP deliver quality of science, based on its work from 2017 through 2019?
 - 1.1. To what extent does the CRP benefit from sufficient high-quality inputs (with reference to the research environment and project designs)?
 - 1.2. To what extent do the CRP management processes ensure the quality of science, including credibility, legitimacy, relevance to next-stage users, and potential effectiveness of the research and operations?
 - 1.3. In what ways are the research outputs, such as germplasm, knowledge tools, and publications, of high quality?

² These earlier clusters and priorities were in place under the Livestock and Fish CRP.

2. Effectiveness

2. What outputs and outcomes have been achieved, and what is the importance of those identified results?

2.1. To what extent were planned outputs and outcomes achieved by 2019?

2.2. What is the importance of achieved outcomes, with reference to CGIAR Intermediate Development Outcomes (IDOs) and sub-IDOs, cross-cutting issues (capacity development, climate change, gender, and youth), and partners' objectives, with consideration for predictability of funding and legacy time frame for the CRP?

2.3. How have the Program's management and governance supported the CRP's effectiveness in research?

2.4. To what extent has the CRP and its Flagship Programs made progress along their ToCs?

3. Future Orientation

3. To what extent is the CRP positioned to be effective in the future, seen from the perspectives of scientists and of the end users of agricultural research (such as policymakers, practitioners, or market actors)?

3.1. What programmatic evidence exists for future effectiveness within the life of the program (through 2021), considering the comparative advantages of the CRP and its Flagship Programs and drawing on the CRP's and its Flagship Programs' progression according to their ToCs?

1.4 Approach, Methods, and Limitations

The review team used a mixed-methods approach, drawing on available quantitative and qualitative data drawn from both internal sources (CRP) and external sources (such as partners and next users). A sample of 15 journal articles was reviewed in depth against QoR4D criteria, including relevance to next-stage users, potential public-good value, and overall quality. This sample was taken from annual reports and represents all FPs, all years, and, as far as possible, all cross-cutting issues. For technical publications, a sample of 11 was reviewed in depth against QoR4D criteria. A total of 35 physical products were also assessed for quality, sampled evenly across FPs and cross-cutting issues. The team reviewed 10 communication products from different FPs and OICRs and of various types (blogs, posters, newsletters, and flyers). The CAS Secretariat provided bibliometric pre-analysis derived from dashboard data, and this allowed assessment of individual articles, journal quality and access, h-indices of researchers, and Altmetrics. The team also conducted 48 individual interviews and two focus group discussions (FGDs)—one with the five members of the Independent Steering Committee (ISC) and one with a group of eight junior researchers³—bringing the total number of people interviewed to 61 (a list of interviewees appears in Annex 2). Given the extensive body of work carried out by the CRP over the three-year period, it was not feasible to do an in-depth analysis of all CRP outcome/impact areas, hence the review team selected two Outcome and Impact Case Reports (OICRs)⁴ for deep dives. According to the ToR, the in-depth analysis of these OICRs should “allow for an assessment of the contribution of the CRP's research to successfully address a given development objective, mapping the reported outcome or impact against the ToC at the Program and Flagship levels.” The following two OICRs were selected:

- #2767: Improved cattle feeding practices in nine Kenyan counties, resulting in increased milk productivity for close to 80,000 farmers, with likely improved income and livelihoods
- #3164: Adoption of woreda participatory land-use planning (WPLUP) in pastoral areas by the Government of Ethiopia

³ By “junior researcher,” we refer to the stage of a researcher's career rather than age of the researcher. A junior researcher is often considered to be within five years of PhD completion.

⁴ According to the 2020 CRP Review Guidelines, the suggested criteria for OICR sampling may include

- High-impact cases to demonstrate effectiveness
- Different themes within a CRP
- If a new OICR, from 2019 to really grasp results from the three-year period at stake in these reviews but preferably with maturity level 3
- Access to key informants in a timely manner
- At least one where partnerships are significantly relevant
- Not being featured in the CRP annual report
- Relationship with CGIAR cross-cutting issues can be evidenced.

The OICR deep dive was carried out through analysis of documents from the CRP and from next users of the research, as well as through interviews with key informants (both within the CRP and the next users of the research, such as external stakeholders in national agricultural research systems [NARSs], national policymakers, and development partners).

As regards limitations and corresponding mitigation measures, it should be noted that the scope of this review is limited to two key areas of investigation: quality of science and effectiveness (with an eye to the future). Other OECD criteria such as relevance, efficiency, coherence, impact, and sustainability are not explicitly addressed, but within the context of the review parameters, the latter criteria have been addressed to some extent. For example, relevance has been assessed in terms of the uptake or scaling up of the CRP research, impact prospects were considered within the context of the deep dives, and sustainability has been addressed to a certain degree through the deep dives and future orientation. The achievement of planned outputs and outcomes by the CRP and FPs also proved challenging as neither planning nor reporting is structured around outputs and outcomes as described in the ToCs, and the current suite of metrics fails to provide a coherent overview of progress⁵. In the case of this desk-based review, fieldwork was not possible, so direct interaction with a sample of end users of products and the opportunity for discovery, follow-up questions, and interviews were not available to the review team. However, through virtual interviews, group interviews, and focus group discussions, the team mitigated this limitation to the extent possible. A potential further constraint was that the review was conducted at short notice, with the risk that some stakeholders would not be available for interview, particularly in countries where the review coincided with school holidays. This risk never materialized, and engagement with key stakeholders was fluid and constructive throughout.

The two-person review team was led by Karen McHugh, who took the lead on assessing CRP effectiveness, and the subject matter expert, Ben Bennett, who focused on the quality of science. The team divided its efforts on other aspects of the review as follows: Karen McHugh considered FPs 4 and 5 and cross-cutting issues, while Ben Bennett reviewed FPs 1, 2, and 3 and capacity development. Each member of the team reviewed one OICR each in detail. All other aspects were considered jointly by both team members. Quality was assured through a series of checks conducted by CAS: an inception note to ensure a consistent understanding of the review objectives and processes, a midterm check on progress by CAS based on a standardized quality checklist, a review of the preliminary findings matrix by CAS and an external reviewer, and a slide presentation of the preliminary findings to CAS, the CRP Management Team, and a peer reviewer.

2 Findings

2.3 Quality of Science

2.3.1 *The Quality of Research Inputs*

Key finding: The CRP team has a wide range of skills. The appropriateness of staff and partner diversity continues to be a challenge.

The Livestock CRP has access to a full range of natural and social scientists. At no point during our review was absence or inappropriate levels of skills among the CRP team mentioned as an issue or constraint. The CRP is implemented through a core partnership of institutions who apply specialist expertise to individual FPs. It seems quite common for individuals at the senior scientist level to participate in more than one FP, as either a manager, principal investigator, cluster leader, or team member. Individuals also commonly work on partner centers' research programs and have center-specific responsibilities. At the senior scientist level this multiplicity of roles, while challenging, is desirable. While CRP staff members appear highly diverse in terms of nationality, some diversity challenges seem to be masked. Ethnic diversity, and in particular diversity of scientific experience, become narrower as one travels up the institutional ladder. More senior scientists are much more commonly from the North and come from the Northern or Western academic tradition. Junior scientists interviewed spoke of facing challenges in breaking into senior roles dominated by Northern researchers. Respondents mentioned that national staff had less career potential and lower professional status than did international staff.

⁵ Please see section 2.2.1 for more details.

Table 1 shows the number of full-time-equivalent (FTE) staff applied to the CRP by category, revealing that input levels have declined somewhat over time, from 193 FTEs in 2017 to 143 FTEs in 2020. A more detailed breakdown appears in Annex 5.

Table 1. Livestock CRP FTE summary, 2017–2020

Staff category	2017		2018		2019		2020		Total	
	M	F	M	F	M	F	M	F	M	F
Scientist	55.80	21.72	48.52	18.48	43.46	18.87	41.87	17.39	189.55	76.46
Postdoc/junior scientist	67.86	26.63	54.21	16.73	60.03	24.94	52.65	24.38	234.75	92.68
Support staff	9.44	11.68	7.20	10.80	5.80	3.36	0.86	6.24	23.30	32.08
Total	133.10	60.03	109.93	46.01	109.19	47.17	95.38	48.01	447.60	201.22

Source: Data provided by CRP Management; note: Table 1 presents data from 2020 purely for illustrative purposes, to observe trends through latest possible Program data; the scope for this review remains 2017-2019.

Gender and age profiles of researchers. Table 1 indicates a consistent disparity between male and female scientific and junior scientific staff throughout the period of the CRP. Some FPs have a greater gender disparity than others; for example, FP4 has near gender parity. Data on CRP age and ethnicity profiles were not available to the review team. Currently, CRPs are not required to maintain this data.

Specific challenges face early career researchers (see Annex 6: junior researcher focus group report). Interviewed researchers who are at an early stage in their career (e.g., postdoc) highlighted the following areas of concern: lack of a clear definition of “junior researcher” within the CGIAR system means that important aspects such as career progression and diversity are not recorded for this group; mentorship and induction⁶ of junior staff are ad hoc and highly dependent upon the decisions of individual supervisors; there is not a specific system to encourage development of women academics or academics from underrepresented backgrounds; excessive emphasis on bibliometrics for the career progression of junior staff potentially undervalues research outputs with high potential for impact; and the various research misconduct policies and practice systems lack clarity and are inconsistently applied.

Infrastructure and technology. No respondent mentioned the absence of specific infrastructure, technology, or scientific resources to carry out any planned research.

Finding: The CRP and FP have developed diverse and appropriate partnerships.

This CRP entailed a partnership between ILRI, ICARDA, CIAT, GIZ, and SLU. While all the centers and SLU were highly engaged, the GIZ partnership, which was aimed at more applied developmental activities, has not materialized as planned. Discussions with individual scientists show that across the CRP a broad range of partnerships have been formed, including with leading global academic institutions, think tanks, nongovernmental organizations (NGOs), central and local governments, and the private sector. It was not possible for the review team to establish with certainty why the relationship with GIZ did not materialize as planned; there was no falling out or change in priority etc., it just did not happen as foreseen (though CGIAR centers continue to work with GIZ as demonstrated in the OICR deep dive on WPLUP in Ethiopia and the recent request by the GIZ country office for help in designing their livestock work in Zambia). The interest to collaborate remains on both sides, which would suggest that more priority/effort should have been afforded to developing this relationship by both parties.

Finding: The CRP had sufficient funding to undertake its actions, although the hiatus in funding of FP3 threatened crucial longitudinal research efforts whose time span exceeds that of the CRP.

Total funding available to the CRP for the period was \$141.5m against a planned budget of \$145.5m. Spending was even over the three years, with a slight decline in 2019 caused largely by a shortfall in W3 funding for that year. Comparing across FPs, it is notable that FP 5 spent 26 percent of the total budget,

⁶ Induction refers to the process of on-boarding new staff.

followed by FP 4 (23 percent), FP 1 (21 percent), FP 2 (13 percent), and finally FP 3 (11 percent).⁷ Notwithstanding the late (2018) inclusion of FP 3 and FP 5 in the CRP, funding seems to have been adequate for planned operations and activities. The balance between Window 1 and 2 (W1/2) funding and Window 3 (W3 = bilateral) has allowed activities in all FPs to continue throughout the period. Staff and partners report the heavy cost in “scientific time” associated with the effort to win and manage W3 funds. Unsurprisingly, planned spending in FPs 1–3, where more fundamental scientific activities occur, is higher than other FPs. Despite the challenges of late funding and seeking matching funding from donors, the CRP has been successful in matching its income to its needs.

2.3.2 Scientific Process (including Partnerships)

Finding: Partnerships are appropriate for high-quality science. More could be done to show alignment with national partners and their strategies. The role of multi-disciplinarity could be encouraged.

This section considers the extent to which the CRP management process ensures the quality of science, including relevance to next-stage users, scientific credibility, and legitimacy.

Effectiveness of approaches to partnership. Partnership formation for research activities in FPs is commonly based on stakeholder analysis and needs assessment undertaken with key partners in the target location. While the role of national research agendas in needs assessment (e.g., links to national research plans) is not always clear, such needs may be present. The benefits of aligning with partner strategies were highlighted in the OICR deep dive (see Annex 7): interviews with local government, donors, and nongovernment actors showed the advantages of strong partnerships. Alignment of national, local, and institutional research agendas was also demonstrated in-country program interviews, notably in Vietnam, where research locations have been aligned with both needs and domestic policy.

A healthy debate is ongoing about the use of participatory and innovation systems approaches within the CRP. There is no doubt about the merit of more ground-up and inclusive collaboration in achieving outcomes that address complex needs. However, the long-term sustainability of such approaches in countries with no budget or national infrastructure to continue them remains a drawback and a brake on their widespread uptake beyond the realm of funded projects.

Multi-disciplinarity. It is becoming axiomatic that new advances in science will require systems thinking and cross-fertilization between disciplines. Evidence of these approaches can be found in the Livestock CRP, but more could be done to promote and encourage them—for example, by ranking scientific outputs by the degree to which they show multi- or interdisciplinarity.

2.3.3 Quality of Outputs

Finding: Most of the elements necessary for scientific credibility and legitimacy are in place, but some aspects are inconsistently applied (e.g., ethics) or not well developed (e.g., conduct, early career researcher support).

Research quality and quality control. Interviews suggest that some CRP research partners pursue research publication targets based on quantity rather than quality. This has on occasion resulted in unacceptable publication behavior, such as publication in poor-quality or predatory journals, publication without author permission, and publication in outlets that are not open access.

Compliance. The CRP has made strong efforts to comply with national research standards. It has addressed some areas of research (e.g., material transfer) better than others (e.g., access and benefit sharing [ABS]). For ABS there is a widespread shortfall in national capacity to implement the Nagoya Protocol. This capacity vacuum is potentially a risk to CRP and CGIAR credibility if, in future, they are accused of contravening these rules. More could be done to build national capacity and to promote policy and practice that allows the ABS protocol to be applied.

Research ethics. The CRP addresses some but not all international standards for ethics in research. It does this through individual CGIAR centers’ internal ethics processes. This approach has led to some inconsistencies, particularly when individual activities are led from outside the system by institutions that do not comply with international ethics standards. There also seem to be variations in approaches and rules for ethics compliance between centers.

⁷ Remaining funds were committed to competitive grants and CRP management. Source: Data aggregated from plans of work and budget (POWBs) for 2017–19.

Research standards and conduct. Some elements of standards for research conduct exist in all centers (e.g., research conduct and behavior are often addressed in individual contracts). Neither the CRP nor ILRI has a system for managing breaches of such standards or disputes between researchers. Interviews show that few research conduct issues have occurred, and all have been resolved with local measures. Nonetheless, inadequate rules in an environment where there are significant power differentials between individuals (e.g., from postdocs and national researchers to senior scientists and world-famous professors) risk the credibility of the organization. ILRI's authorship guidelines⁸ contain a recommended dispute mechanism, and this is a useful starting point.

Early career researchers. Well-managed research organizations recruit and retain junior researchers and have systems for nurturing them so that their contributions and development are maximized for future systemic gain. Junior researchers are also the most vulnerable, having the least power and influence at this stage in their careers. The current system for supporting junior researchers is vague and based on individual supervisors and line managers of junior staff. A group interview with junior researchers across a wide geography and with an even gender base was conducted and is summarized in Annex 6. The main findings were as follows: there is no clear definition of "early career researcher" in CGIAR or in the CRP other than by pay scale; new staff induction is not consistent; training is available and appreciated; and the metrics of success are clear (e.g., grant winning, publication, and communication products). A divide between junior researchers recruited from the global South compared with those from the North was perceived. Junior researchers are unaware of how to address academic misconduct or inappropriate behavior. Mentorship and career management are considered a line management responsibility.

Finding: The CRP is producing a high volume of research outputs with mostly good, and some excellent, quality.

Volume of research outputs. Table 4 shows the high volume of peer-reviewed publications from the CRP: 342 papers in three years. A high proportion of these journal articles are in ISI-ranked journals with proper peer review to a normal academic standard. The 72 percent open access figure is noteworthy: one would expect that a higher proportion of the journal output of the CRP, with the exception of papers with protected commercial intellectual property, would have been open access. Interviews suggest that among the reasons for this situation are papers led by CRP partners that are not internally approved and therefore do not have open access funding, and papers led by external entities that have open-access policies different from those of the CRP.

Table 2. Volume of peer-reviewed publications, access, and quality

Item	2017		2018		2019		2020		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Data provided to reviewers by CAS	66	100	112	100	147	100	17	100	342	100
Annual reports: Peer-reviewed publications	94	100	174	100	174	100	–	–	442	100
Annual reports: Open-access journals	62	66	140	80	115	66	–	–	317	72
Annual reports: ISI-ranked journals	–	–	157	90	158	91	–	–	315	71

Sources: CRP ARs 2017–19 and CAS pre-analyzed data. Note: Table 2 presents data from 2020 to capture journals reported by the CRP in 2019 that appeared in Web of Science in 2020; the scope of this review remains 2017-2019.

Note: The apparent discrepancies in the data are due mainly to different approaches applied in generating the figures and should not be interpreted as disputed claims. The CRP annual report figures include the total number of peer-reviewed publications, whereas the CAS figures provided for review are only for ISI-ranked publications in Web of Science journals. The percentage of ISI-ranked and open-access publications in this table are thus based on the CRP

⁸ International Livestock Research Institute (ILRI). (2013). ILRI research publishing procedure 4: Authorship. Nairobi: ILRI.

annual reports, not the Results Dashboard data, pre-analyzed by CAS (see report disclaimer), and therefore do not always agree with those contained in the CGIAR Dashboard. Dashes refer to data not found.

Outputs per active researcher. What constitutes a suitable research output in terms of papers per researcher is moot. High numbers of authorships do not necessarily equate to high quality, and much depends upon the norms for inclusion of authors (e.g., in some traditions the principal investigator is included in an author list even if they have not contributed) and the number of PhD students supervised. Journal quality is also a factor in publication success, as are experience, research networks, and, to some extent, luck (e.g., a special edition coinciding with a particular research output). In general, one good paper a year is normal in most academic environments. Of the 2,032 authors in the citation list, 144 have three or more citations, which seems reasonable as many or most of these are CGIAR staff. ILRI has a set of guidelines and procedures for assessing research outputs by staff,⁹ and this seems to be used as an assessment and reward tool throughout CGIAR. While it is good to set expectations, the problem with this approach is that it measures quantity rather than quality. In contrast, a more nuanced means of assessment might, for example, reward very high-quality papers over lower-quality reports and blogs.

Quality of research outputs. The general quality of research reviewed is good to high, with a fair quantity of excellent (e.g., globally important). Of the 175 peer-reviewed publications, books, and book chapters, the average number of citations per document was 3.102, or 1.048 citations per year (A well-received journal article in a high-quality journal might expect to receive at least five citations in its first year after publication). For most papers, the rate of citation then tails off. While there are examples of excellence among the CRP's journal paper outputs, the quality is uneven. A few authors produce highly cited and impactful papers in top journals. Many authors are not producing a large volume of output or output that is highly cited. Of the 342 documents reported by CAS, 309 (90 percent) were journal papers, and the rest were reviews, proceedings, and other kinds of output of less academic or research value. A sample of 14 papers, chosen randomly from papers reported in annual reports (ARs) for 2017–19 and across a range of FPs, was assessed in depth for academic quality (rigor, originality, and international public goods) (see Annex 8, Tables 1 and 2). This sample shows high-quality work, some world-leading global collaboration, high levels of novelty and originality, and, in most cases, significant research interest. Some of these papers were not open access. Where open access is possible, this should be mandatory.

Research collaboration. With only three exceptions, all 2,032 authors were part of a collaboration, suggesting a very high level of co-authorship (CAS calculates a collaboration index of 5.98, which seems very good). In terms of productivity, the top 10 authors produced 4 percent of all publications and 32 percent of all authors reported peer-reviewed publications (109 items). During the review period, 49 CRP authors published more than five papers each, and 1,687 (83 percent) of authors feature only on one paper. This shows a high concentration of outputs in a somewhat limited range of CRP authors and a long "tail" of limited authorship. Citations of journal papers indicate utility and next-level uptake of published research results. As with productivity, there is a skewed distribution of citations. Citation numbers depend on the academic field of the work and quality of the output. They are also impacted by accessibility (e.g., open-access versus non-open-access sources) and the quality of the journal chosen for the publication of the work. Papers in higher-quality journals in their fields tend to be cited more. As with productivity, the top 10 cited CRP papers have a disproportionate number of the total citations, at 30 percent (310 of 1,061 citations), while there are 279 papers with fewer than five citations. Pre-analysis of papers by CAS according to the country of origin of the institutional host of the authors unsurprisingly shows a concentration in geographies with CGIAR partners (Kenya, Ethiopia, Colombia) and academic partners (United Kingdom, Germany, China, Netherlands). A total of 47 different countries have been involved in peer-reviewed publications, indicating a good range of global engagement in research. It is noticeable that total citations are highest for UK collaborations. Partnership with countries that have similar quality-driven national research systems can improve output quality. Figure 1 in Annex 9 shows an exceptionally high level of international collaboration in the collaborative networks of CRP authors.

Quality of journals. Journal choice is an important driver of research quality and impact (see Annex 8, Table 3). For all academic research, the aim should be to publish in the journal in one's field with the highest impact factor possible. Impact varies greatly between academic fields: natural science journals often have much higher impact than social science journals. The CRP publishes a significant quantity of papers in high-quality journals (quartile 1, or high impact factor). The most common of these are agricultural or genetics journals such as the journals *Frontiers in Genetics* or *Animals*. The CRP has published many papers (15) in *Tropical Animal Health and Production*, a quartile 2 journal with a relatively low impact factor. Similarly, 10 papers have been published in *Small Ruminant Research*, which is quartile 3. Looking at the 10 most popular journals, however, undersells some of the very high-quality

⁹ ILRI. (2017). Guidelines and procedures on benchmarking scientists' performance. Nairobi: ILRI.

work. There are, for example, two papers in *Nature*, a paper in *Food Policy*, and a paper in *BMC Plant Biology*. Some of these journals are world leading, and publication in these is of the highest value.

Technical publications. A sample of 11 technical publications was assessed in depth (see Annex 8, Tables 4 and 5), with a focus on FPs and the chosen deep-dive OICRs. This sample includes working papers, project reports, conference proceedings, business plans, and book chapters. The standard of these outputs are mostly good, with strong next-stage relevance and capacity for development, but there is scope for improvement. Presently, quality control and review are done by a PI or line manager and are not applied rigorously, according to interviewees.

Physical products. A sample of 34 physical products was selected for in-depth review from ARs, including varieties, digital innovation, methodologies, and tools. These were sampled by year, by FP, and by cross-cutting theme (gender, capacity development, youth). The results are collated in Annex 8, Tables 6 and 7. The majority of the physical products assessed were either relevant or highly relevant to the next-stage user. This sample was taken from a total of 108 technical innovations reported (see Annex 8, Table 8). These data are somewhat hard to reconcile: “innovation” and “technology” are broadly defined and can range from a new method of cooling milk with solar power to a tool to engage women in technology development. Also, some technologies are double counted in this system because they change innovation stage from year to year. Nonetheless, the data suggest that the CRP has generated a large number of technologies and that a number of products are available for uptake but have not yet been adopted. A total of four products were adopted during the CRP period. The quality of these physical products is good to high in most cases, with high relevance to next-stage user where access is possible. Not all of these outputs have capacity development potential. Where this was the aim of the product, potential is high.

Communication products. A non-representative sample of 10 communication products was reviewed in depth (see Annex 8, Tables 9 and 10). All the products reviewed were good, and some were excellent. Among the good and excellent examples were some inspiring videos and high-quality research syntheses. There were many blogs, which ranged from excellent and impactful to vague and institutional. It would be useful if each type or format of communication material had a clearly stated purpose. It is also not apparent how these materials are assessed for quality factors.

2.4 Effectiveness

2.4.1 Achievement of Planned Outputs and Outcomes

Key finding: There has been some good progress and achievements across FPs as well as potential areas for development but delays and shifts in priorities cause concern.

All FPs can point to significant achievements. In FP1, the move toward more farmer-, user-, and gender-based breeding strategies seems to be meeting with early success, such as in the East African dairy breeding program, with support from the Bill and Melinda Gates Foundation. Results, however, will come well beyond the ambit of this CRP period. For FP2, a general transition to a holistic animal health management approach seems very welcome. One example is the methodological framework for upscaling community-based breeding that has been piloted in Ethiopia, Sudan, and Tanzania, although issues of the sustainability of this approach post-intervention have to be resolved. FP3 has made some good progress. For example, there is evidence that new forage and fodder species developed in earlier projects and programs have been released and adopted. Also, there are some excellent examples of private sector uptake of results (e.g., a Mexico-based company with global reach has taken up forage seeds; commercial forage production in the dairy sector is occurring in Kenya). FP1, FP2, and FP3 show the potential for greater engagement with private sector actors in a more systematic way. The absence of FP3 from the first year of the CRP might have had serious implications if alternative bilateral funding streams had not been identified to support the ongoing longitudinal research work (e.g., plant breeding programs, development of vaccines). This highlights the CRP’s challenge in supporting fundamental multiyear longitudinal research with short-term funding. A hiatus in this type of research could have a high cost.

There has been a notable and commendable general shift during the three years of the CRP toward more farmer-driven, inclusive, and systematic approaches in the more heavily science-focused FPs. In FP1 the emphasis on identifying traits that respond to cross-cutting issues is an important in-program adjustment that is showing interesting results. In FP2 work on a more holistic herd-health approach looks promising. All these FPs have started to generate outputs that address possible business models for future uptake and scaling, with some good examples in FP3. Several interviewees mentioned the influence of A4NH and collaborations with FP4 and FP5 as drivers of these shifts in approach. In the case of FP4, many of the

standout products¹⁰ are the result of work carried out under previous phases of some CRPs such as CCAFS and PIM, underlining the long-term nature of the research to development impact pathway. It has had successes with rangeland restoration using combinations of local governance arrangements and simple restoration techniques, such as reinstating dryland grazing areas and allowing natural reseeding in Ethiopia, Kenya, and Tunisia. It rolled out the Kenya Livestock Insurance Program (KLIP) and published baseline greenhouse gas (GHG) emissions for Kenya and Vietnam (with some progress in Rwanda and Uganda as well). Three forage intensification options adapted to climate change were disseminated in Ethiopia, Kenya, and Tanzania. Manuals and tools for rangeland and land use planning processes were disseminated to community leaders, local government officials, and line ministry staff in Ethiopia, Kenya, Tanzania, and Tunisia. A framework for assessing the environmental footprints of technologies and interventions was developed, tested, and refined (CLEANED X in Ethiopia, Kenya, and Rwanda, and CLEANED R in Burkina Faso and Ethiopia). And RHoMIS (a rapid, standardized, cost-effective agricultural performance tracking tool that enables evaluation of trade-offs between household food security, production, and environmental objectives) was adopted by 13 organizations to guide investments and generate information on 24,000 households in 31 countries.

From the above, it can be seen that of the four targeted environmental footprints, most progress has been made with regard to GHG emissions and land degradation, less in the case of water, and very little in the case of biodiversity. Progress has stalled in the case of water, which is now limited to work on water contamination with the IHE Delft Institute for Water Education. On biodiversity, an apparent lack of prioritization and donor funding has significantly constrained progress. Other areas where progress has been below expectations relate to the quantification of environmental impacts to guide the development and selection of productivity-enhancing options and the scaling up of sustainable rangeland interventions to livestock producers.

Like FP3, FP5 lacked access to W1/2 resources in 2017, which, combined with the reduced timeframe of five instead of six years, has affected its capacity to deliver as planned. Key achievements of FP5¹¹ to date include the production of Livestock Master Plans (LMP) in Bihar, Rwanda, and Tanzania; publication of a youth strategy for the CRP; a social and behavioral change communication (SBCC) strategy for nutrition-related behavior implemented among 5,000 households; feed, health, and breeding technologies as well as organizational and business models implemented by livestock communities in Kenya, Tanzania, and Uganda; securing of funds for the continuation of GLAD (Global Livestock Advocacy for Development); various reports on animal-source foods (including the well-received report on the role of animal-source foods in the first 1,000 days developed with A4NH and Chatham House¹²); and scenarios and modeling approaches for integrated macro-meso analyses. Areas of concern raised about this FP relate to its limited success in integrating its work with the other FPs (with the exception of the gender team) and its theoretical and modeling approach to certain tasks such as the development of markets on the ground and of business models.

Key finding: An assessment of the achievement of planned outputs and outcomes by the CRP and FPs is challenging as neither planning nor reporting is structured around outputs and outcomes as described in the ToCs, and the current suite of metrics fails to provide a coherent overview of progress.¹³

The lack of consistency between planning and reporting documents hinders effective results-based management (RBM) by the FPs and CRP and denies partners easy access to information on CRP progress along their ToCs. Planning and reporting documents are not structured around the ToCs, so it is not feasible to assess planned outputs and outcomes, as identified in the ToCs, against FP/CRP achievements as reported in the ARs. Planning is mainly focused on “delivery,” which is broken down into “expected annual milestones towards outcomes 2022” and “output towards outcomes 2022.” Reporting is focused on achievement of outputs and milestones, though not systematically—i.e., all outputs identified in the POWBs are not reported on in corresponding ARs. The ARs report on achievement of higher-level results in tables on “evidence on progress towards the SLOs (sphere of interest),” but in most cases there is “no new evidence” of progress on this level. “Outcome case studies”¹⁴ and “common results reporting indicators” (CRRIs) are also used to track achievement of higher-level results, but these are not identified in the POWBs, so it is difficult to assess to what extent planned results have been achieved, depriving management of key information. In addition, the targets set for outcomes (2022) in the ToCs are not

¹⁰ As reported in the ARs and by FP staff.

¹¹ As reported in the ARs and by FP staff.

¹² A journal article in *Frontiers in Sustainable Food Systems* on food access deficiencies in Sub-Saharan Africa and implications for agricultural interventions is in the top 5 percent of all research outputs.

¹³ A more detailed assessment of the CRP's results-based management system is provided in Annex 7.

¹⁴ Text used in the AR to refer to Outcome Impact Case Reports (OICRs).

being tracked and have no corresponding baselines. This hinders management's capacity to provide a clear picture of progress along their respective ToCs.

The current suite of metrics fails to provide a coherent overview of progress. The lack of indicators mapped to the CRP and FP ToCs has resulted in the emergence of a suite of metrics heavily focused on milestones and CRRIs, which do not adequately capture progress toward higher-level goals and do not provide a coherent overview of progress. This is changing somewhat with the country focus—e.g., common indicators and baselines are being developed—but this shift is coming late in the process. Although originally conceived as a means of assessing progress midway through the CRP (and at the end), **milestones** are now established on an annual basis and have evolved into one of the preferred means of measuring CRP progress. Progress with regard to milestones over the three-year period under review is summarized in Table 5, where it can be seen that of the 118 milestones set for the 2017–19 period, 81 (68.9 percent) have been completed while 39 were extended and 3 were canceled.

Table 3. Proportion of milestones completed, extended, or canceled, by FP (2017–19)

Milestone status	FP1 (%)	#M FP1	FP2 (%)	#M FP2	FP3 (%)	#M FP3	FP4 (%)	#M FP4	FP5 (%)	#M FP5	CRP level (%)	#M CRP level
Canceled	5.3	1	0.00	0	2.9	1	0.00	0	4.76	1	2.5	3
Completed	52.6	10	55.6	15	88.6	31	68.8	11	66.7	14	68.6	81
Extended	42.1	8	48.2	13	14.3	5	37.5	6	33.3	7	33.1	39
Total	100.00	19	100.00	27	100.00	35	100.00	16	100.00	21	100.00	118

Source: CAS (Results Dashboard data pre-analysis) and MARLO.

However, various questions arise about the relevance/ robustness of these milestones for measuring the performance of CRPs/FPs and there is a lot of misunderstanding and dislike around them among FP staff. In the first place, there is a wide variation in the number of milestones set per FP e.g. FP3 has recorded 35, while FP4 has recorded 16; it is not clear what this data tells us about performance and the achievement of goals i.e. it is not evident that more milestones mean better performance, and vice versa. Also, the impact of a given milestone varies widely making it impossible to compare e.g. (i). Five sustainable rangeland interventions in Kenya, Tanzania, Tunisia, and Ethiopia are identified, tested, and disseminated to livestock producers by the end of 2018 versus ii). Two events will be influenced by the end of 2018: a high-level communication on livestock and environment at the GFFA and a side event on livestock and environment at UNFCCC COP 24 i.e. where one is an outcome and the other an activity. Furthermore, the relevance of milestones as a means of measuring progress along a given trajectory is useful only if we know what the full trajectory is—i.e., what the next steps are—which is not the case here. Closely linked to this is the lack of subsequent reporting on milestones given **their annual nature, which does not allow for a longer-term perspective on the achievement of goals** and targets. By focusing on the annual achievement of milestones, the CRP faces a strong risk that progress toward higher-level goals is not being adequately planned and/or captured—e.g., there is no systematic reporting of milestone progress in subsequent years. In addition, it is not clear what should be concluded from the data on completed, extended, and canceled milestones. According to the data in Table 5, FP3 might be deemed the most productive or successful FP, with nearly 89 percent of planned milestones completed, and FP1 the least productive or successful, with only 53 percent completed, but conclusions cannot be reliably drawn in this regard.

Other means of assessing progress used by the CRP include the number of “innovations” and the number of “policies,” where an innovation is defined as new or significantly improved outputs or groups of outputs—including management practices, knowledge, or technologies—and is classified according to four categories/stages: stage 1: discovery/proof of concept; stage 2: successful piloting; stage 3: available/ready for uptake; and stage 4: uptake by next user. “Policies” refer to policies, legal instruments, investments, or curriculum that have been modified in design or implementation, informed by CGIAR research, and are broken down into three levels: level 1: research taken up by next user (decision maker or intermediary); level 2: policy or law enacted; and level 3: evidence of the changed policy's or investment's impact on people and/or the natural environment. Because these two indicators are not mapped to outcomes in the FP ToC, they do not serve as an appropriate means of capturing FP or CRP progress. Another metric used by the CRP to capture higher-level results is the Outcome Impact Case Report. While OICRs are clearly useful for communication, they have limited value for reporting progress

toward achievement of higher-level results as they are not systematic and they are “once-off” products—i.e., the full trajectory of the desired change process is not captured as would be the case with indicators.

2.4.2 Demonstrated Importance of Outcomes (Deep Dive on Selected OICRs)¹⁵

Key finding: OICRs have the potential to reveal long-term impact narratives of scientific and technical innovation.

OICR #2767: “Improved cattle feeding practices in nine Kenyan counties, resulting in increased milk productivity for close to 80,000 farmers, with likely improved income and livelihoods”

The outcomes from this OICR are built on six years of previous programmatic work and a substantial investment in development support by the US Agency for International Development (USAID) and the Government of Kenya. It is a great example of how sets of innovations and technologies can align with developmental investment and capacity building to make real change at scale. Better genetics for dairy animals, improved health management, new breeds of forage grass, clearly defined and successful business models, strong collaboration with government and nongovernment partners have all come together to jump-start a whole subsector in rural Kenya. In-depth interviews with project partners and beneficiaries support this view.

Key finding: It is not sufficient to just deliver the science; it is essential to ensure sufficient resources, both financial and human, to allow that science to deliver on development objectives.

OICR #3164: “Adoption of woreda participatory land-use planning (WPLUP) in pastoral areas by the Government of Ethiopia”

The Integrated Local Level PLUP manual—the result of a highly collaborative process involving numerous stakeholders—is of good quality and is highly appreciated by all partners interviewed for this review. There is clear commitment to rolling it out within the government, though whether this commitment is fully embedded within the ministry of agriculture and natural resources is not certain given the lack of funding allocated from federal and regional levels for its rollout. The key lesson learned from this exercise that it is not sufficient to just deliver the science; it is essential to ensure sufficient resources, both financial and human (including capacities), to allow that science to deliver on its final objective—in this case, more productive and equitable management of natural resources and reduced land degradation. Without the funding secured for the rollout of PLUP to other woredas, there is a strong risk that this manual will simply end up on the shelf. The high level and quality of partnerships established for the elaboration of the manual should have extended to partners willing and able to take it to the next stage.

2.4.3 CRP Management and Governance

Key finding: CRP and FP management have proven to be adaptive to changing circumstances.

There is a general consensus among those interviewed that CRP management has been effective in responding to the challenges and risks associated with shifts in priorities and financial shortfalls. For example, to address the reduction in the 2017 W1/2 funding (due to the withholding of funds from two FPs), the CRP implemented a series of cost-saving measures in its management and governance, such as delaying the recruitment of a number of CRP management positions as well as a number of activities. In addition, a series of measures ensured the ability of the CRP to deliver on its commitment to cross-cutting themes, such as gender and youth, planned under research activities in one of the unfunded FPs (FP5); the CRP carried out a youth needs assessment and developed a youth strategy as planned but did not initiate any research activities as such under the unfunded FP5. **Insufficient funding also posed risks to CRP engagement and work in its priority countries.** The decision was taken to reduce the number of priority countries from the originally planned nine to four so that sufficient W1/2 funding would be available for each country to maintain a core set of activities regardless of bilateral funding uncertainty. Another potential risk related to CGIAR funding arrangements is the need for significant pre-financing of activities, which is not always possible for external partners; the CRP addressed this issue by negotiating exceptions to standard CGIAR financial requirements.

CRP management has become more decentralized, giving FP management more autonomy than was the case in the preceding F&L CRP. This allows the FPs to address changing contexts, challenges, and priorities in their annual planning exercises and to leverage the necessary funds. There are various

¹⁵ More detailed assessment of the OICRs is presented in Annex 6.

examples of this adaptive capacity. FP2 expanded research on alternative delivery models to facilitate access to animal health services in Ethiopia and Kenya thanks to two new bilateral projects focused on strengthening private sector involvement. FP4 expanded work on rangeland management to include more gender dimensions in response to a request from the ILC Rangelands Initiative. Initial funds for a gender study came from the PIM CRP (FP5), and the Livestock CRP now incorporates gender dimensions into rangeland management tools. Similarly, within the framework of the priority country projects, FP5 carried out assessments of scaling readiness in Tanzania and Uganda, while FP3 expanded its ex-ante assessment work to determine the potential economic impacts of adopting a new forage variety in Colombia (using bilateral funds from the Colombian Forages Network). FP2's work on antimicrobial resistance was refocused on the use of antimicrobials, with limited recording of antimicrobial resistance; this shift occurred because the flagship has a comparative advantage in the use of antimicrobials, whereas other actors are considered to be equally capable of monitoring antimicrobial resistance (and are doing so). FP1 placed less emphasis on activities supporting policies and institutional arrangements for animal genetic resource use owing to the generally favorable institutional and policy environments for animal genetic resource use in the FP target countries. In other cases, specific work areas have had to be dropped. In the case of FP2, joint work between ICARDA and ILRI on alternative methods to control ticks was dropped owing to lack of funds and difficulty in identifying the appropriate person to undertake the task. In FP4, the work on payments for ecosystem services remained unfunded, owing to the lack of opportunities for bilateral support, and has been dropped.

Key finding: The priority country programs are promising, though they are still in the early stages of development of the focused, integrated intervention testing.

Because of insufficient resources, the number of priority countries was reduced from nine to four—namely, Ethiopia, Kenya, Uganda, and Vietnam. These priority/core countries are described as laboratories for testing the concept of delivering science to users by demonstrating that the research-to-impact process can be accelerated by having FPs combine efforts in selected locations and go to scale. Although work is still in the early stages (it started in 2019) and varies between countries, there are some promising signs, such as increased intra-FP collaboration, better alignment with farmers' needs, and partners (government, private sector, and donors), and improved potential for scaling. In the case of intra-FP collaboration, an interviewee observed that "the FPs come together in country." The integrated intervention packages mean there is joint planning by the different FP research teams, including the joint elaboration of the respective ToCs and design of baseline studies. Coordination between FPs and researchers means that the same integrated package of interventions is on offer for next and end users and that there is one team trying to address the problems of the livestock producers in a holistic rather than siloed way; farmers are not just interested in one-off technologies. Interesting lessons have emerged from the first "CRP Livestock Cross-Country Learning Week" held in April–May 2020 and from interviews. One is the observation that working on integrated intervention packages encourages FP researchers to look at the bigger picture rather than individual interventions.

Another key lesson is that impact comes through partnerships. For example, in Tanzania, a broad range of stakeholders in the integrated intervention packages—agripreneurs, researchers, innovators, service providers, and delivery organizations from both the private sector and NGOs—have been involved in prioritizing best-bet technical and institutional innovations, and this is how the innovations and technologies can be taken to scale. The country teams reported that engaging partners from the start of projects not only helps get their buy-in but also helps obtain local insights (and secondary data) to inform the project's design and make project targets more suitable to the local context. Thus, key development partners should be engaged from the onset, both to get their buy-in for the intervention packages and to engage them in the scaling strategy. Once partners are convinced of the effectiveness of the approach or intervention, they are likely to support implementation in other areas. In Ethiopia, experiences were shared by participants on working with partners at international (e.g., FAO, World Bank), national (e.g., extension services, national agricultural research institutions) and local (e.g., communities, veterinarians) levels to support scaling by adopting best practices in their strategies and ways of working beyond the project. These partners then become vehicles for scaling the intervention packages to other areas (spillover effect) as well as to higher levels of intervention. In Ethiopia and Vietnam, public extension services and regional governments were identified as important partners for scaling. In these cases, alignment with government policies and programs is seen as crucial to engage with the public sector partners. The need for multidisciplinary teams was also highlighted. The work of scientists needs to be complemented by other "soft skills" capable of bridging the gap between CRP technologies and donors/partner governments.

A number of challenges to this country-based approach were identified, i.e. the additional effort required to coordinate and integrate activities among FPs and the fact that the time researchers spend on such

activities is often not recognized in regular performance indicators and reviews. Furthermore, insufficient resources and the limited time frame of the priority country programs, which have been further disrupted by COVID-19, give rise to concerns that achieving impact through an integrated approach is unrealistic within the remaining time frame. Exit strategies are therefore considered necessary.

Key finding: CRP management structures are not effective in promoting cross-FP coordination and learning.

In general, the work of the Independent Steering Committee (ISC) is perceived as positive, and many of the points raised in its annual meetings are reflected in comments made to the review team by FP staff. These include references to the major challenges posed by the CRP funding model, including CRP management's lack of control or leverage over bilateral FP funding, and the difficulties for long-term planning posed by the fact that funding is annual and does not come in until the end of the year (sometimes even later). This model leaves CRP management with little or no control over a large share of the budget and strategic research directions. FP staff also point to the difficulties resulting from the limited resources available for cross-cutting activities (gender, youth, capacity building, monitoring, and evaluation) at the CRP level and the weaknesses in the reporting system. Other observations made by the ISC that resonate with FP staff include the potential for researchers to have their accountability divided between CRP strategic directions and those imposed by their bilateral funding, and the need for balance between fundamental/discovery research and development activities as the programs move forward. This funding uncertainty almost certainly has an impact on quality of science and effectiveness.

An area of concern raised by the ISC but not adequately addressed to date is the need for more effort to integrate activities across all the FPs and more frequent meetings between FP leaders to ensure better coordination and sharing of information about best practices. Many interviewees shared the perception that intra FP collaboration is less than it could and should be. Though the increased autonomy of FPs under this CRP is assessed positively, the flip side of this management shift is reduced collaboration and a more siloed approach. FP leaders would appreciate more engagement in decision making, through participation in the Program Management Committee for example, and more opportunities to interact with each other (as recommended by the ISC). Some FP leaders complain of "isolation" from the governance of the CRP and therefore a lack of strategic direction. More guidance and clarity are needed on creating the right balance between fundamental research, applied research, development activities, and capacity building at various levels on the one hand and innovation or scaling efforts on the other. Also raised as a key issue by the ISC is the need for more consideration to be given to learning, through both improved reporting and more independent impact assessments. In the case of the former, there is a widely held belief that current reporting formats (including MARLO) do not encourage learning. Although most interviewees appreciate the need for a tool such as MARLO, it is considered very time consuming and often entails a duplication of effort (activity sheets are required in addition to uploading of data on MARLO). Furthermore, the reporting templates are frequently changed and as noted above, do not adequately capture results achieved and lessons learned that would feed into future programming. In the case of learning through evaluation studies, there is a strong perception that this is not a priority—e.g., the number of impact assessments carried out to date is extremely limited. Various factors have contributed to this lack of prioritization. In the first place, it suffers from a serious lack of funding; while "everyone is eager to use evidence, no one is willing to pay for it,"¹⁶ and among researchers there is an inherent conflict between the drive to produce innovations and the interest in carrying out evaluations. In the case of donors, the interest is in the adoption of innovations or technologies and not the assessment of impact. A related problem is that responsibility for evaluation lies mainly with the technical FPs, which do not necessarily see it as a priority as they are "science focused." These FP-specific evaluations were to be complemented by evaluations of packages of innovations by FP5 and strategic evaluations with funding from the Strategic Investment Fund (SIF) but these have been very limited. In addition, impact evaluations by their nature are expensive and require long-term planning—e.g., to collect baseline, midline, and endline data—whereas CRPs operate on the basis of annual planning schedules. This means that various sources of funding are required. The evaluation work being done on the country programs is a good example: baseline data are now being collected, but midline and endline data will need to be collected post-CRP, so funding is uncertain at this point in time.

¹⁶ This observation was made by an interviewee.

2.4.4 Progress Along the ToC (CRP and Flagships)

Key finding: The quality of the ToCs is acceptable but could be improved to enhance use.

While the overall logic of the CRP and FP ToCs is reasonable—i.e., the outputs could lead to the outcomes, which in turn could lead to the overall objectives, if a series of assumptions hold—some weaknesses have undermined their usefulness as an operational tool for FP and CRP management. In the first place, the language used and the planned results¹⁷ are not consistent across the different versions of the ToC (narrative versus diagram), giving rise to confusion. For example, in the case of the overarching ToC for the Livestock CRP, the “goal” of the Livestock CRP is defined as “to create a well-nourished, equitable and environmentally healthy world through livestock research for development.” However, this “goal” does not appear in the diagram depicting the ToC, which instead includes six **Intermediate Development Outcomes** (IDOs) as the ultimate goal of the CRP. The narrative then goes on to identify five “objectives” of the CRP. Although these objectives are in effect the overall objectives of each of the five FPs, they do not appear in the diagram depicting the ToC, which introduces four categories of “outcomes” based on the next users of research outputs—consumers, markets, and enterprises; local, national, and international research and development systems; producers and communities; and policy and investment systems—and the sorts of changes in behavior and capacity targeted.” In addition, the overall objectives of the FPs as identified above are not picked up in the ToCs of the different FPs (which instead include sub-IDOs on impact level), which means that the opportunity to link the FP ToCs and the CRP ToC is missed. In addition, there are no outputs defined in the CRP ToC, which instead includes the names of the five FPs, so it is unclear how the planned CRP outcomes will materialize. The assumptions underpinning the ToC are very much focused on external partners—e.g., the buy-in of next and end users—with no reference to key internal assumptions such as the relevance or quality of science, upscaling, and outreach, the quality of partnerships, the capacity to deliver.

The same inconsistencies arise in the case of the FP ToCs—e.g., the principle hypothesis underpinning the ToC for FP4 as presented in the original proposal is sound: “the underlying assumption is that increased support and investment, guided by strengthened capacities and an actionable evidence base, will result in the increased and sustained adoption of environmentally-friendly practices and in turn benefit the environment and the people depending on it.” However, as with the CRP ToC, the more detailed description of this ToC is confusing, as the narrative is different from the version presented in the ToC diagram and the language used is inconsistent. The narrative starts with a description of the **seven sub-IDOs** to be addressed by the FP¹⁸ and goes on to identify the FP’s **three objectives** as

1. Identify solutions to environmental management challenges, and provide diverse stakeholders, including women and young people, with the knowledge and incentives to change their behavior and implement the solutions
2. Provide foresight as to how environmental footprints are likely to evolve and feed information back into decision-making processes so as to avoid negative environmental outcomes
3. Foster an enabling policy and institutional environment for the environmental management of livestock production, through research and engagement with key decision-makers.

However, these objectives are not present in the diagram version of the ToC (though they do broadly reflect the three clusters of activity within the FP). The narrative then identifies a series of FP “outcomes” for 2022, which include:

1. Reduction in land and water degradation of 7.9 million ha, which positively impacts 5.1 million direct and indirect beneficiaries across 8 countries
2. More productive and equitable management of natural resources in rural communities, with benefits experienced by 2.2 million beneficiaries, representing 14 million ha across nine countries;
3. Diversification and intensification of livestock production systems in ways that protect soils and water (representing land area of 7 million ha), with benefits experienced by 2.4 million beneficiaries across nine countries

¹⁷ Where results cover all three levels of output, outcome, and impact.

¹⁸ These are (1) land, water, and forest degradation (including deforestation) minimized and reversed; (2) increased resilience of agro-ecosystems and communities, especially those including smallholders; (3) more productive and equitable management of natural resources; (4) agricultural systems diversified and intensified in ways that protect soils and water; (5) reduced net greenhouse gas emissions from agriculture, forests, and other forms of land use; (6) technologies that reduce women's labor and energy expenditure developed and disseminated; and (7) improved capacity of women and young people to participate in decision-making.

4. Ten (10) percent increase in agroecosystem resilience, impacting 1.8 million final beneficiaries (representing 9.2 million ha) across six countries
5. Two (2) percent reduction in GHG emission intensities from agroecosystems (0.08 Gt CO₂-e yr⁻¹), impacting 7 million indirect beneficiaries across seven countries
6. Development and dissemination of environment management interventions that reduce women's labor and energy expenditure by 10 percent, reaching 770,000 women in nine countries
7. Improved capacity of 930,000 women and young people to participate in decision-making for environmental management of livestock in nine countries.

These seven “outcomes” are clearly linked to the seven sub-IDOs, which the FP aims to address but which are formulated as targets rather than outcomes. The relevance of these targets to a five- to six-year research-based program is questionable. In any event, they are not being tracked and do not even have baselines. It is not clear how some of them would even be measured. The ToC¹⁹ is then presented as a diagram broken down into outputs, research and (near) development outcomes, and sub-IDOs. While the outputs are more or less consistent with the narrative (though they are not identified as such), the “outcomes” presented in the ToC are not the same as the “outcomes” described in the narrative. Furthermore, the distinction between research and (near) development outcomes introduces an element of overlap, and it is not clear how this distinction adds value to the ToC. One of the outcomes—4.4. “Gender responsive environmental management options that are well adapted to Global Environmental Change (GEC) are adopted by households (women & youth)” —also appears to be a higher-level result (impact) than the other planned outcomes. In the case of FP5, the same issues occur, but there the CoAs are incorporated into the ToC, and outputs such as “Youth in livestock” and “Gender-transformative approaches” are not well defined.

Key finding: The ToCs are overly ambitious and reflect the broader problem of trying to capture the long-term change process from innovation and basic research to applied science or technology delivery, and ultimately to the improved well-being of smallholders.

As evidenced in the Livestock CRP, the time required for an innovation or piece of research to pass through the stages from discovery/proof of concept to impact on people or the natural environment can be 8–10 years or longer—far longer than the life cycle of a CRP. However, funder insistence on tangible results on the ground has put pressure on the CRPs to incorporate such results into their respective ToCs, rendering these unrealistic and thereby undermining their usefulness. This lack of realism is particularly evident in the gap between planned outcomes and impact (referred to as research and [near] development outcomes and sub-IDOs in the FP ToCs). For example, in the case of FP4, the leap from “Government agencies and development partners at local and national levels are promoting environmental management options” (outcome) to “More productive and equitable management of natural resources” (impact) or “Reduced net greenhouse gas emissions from agriculture, forests and other forms of land use” (impact) is simply not realistic. Likewise, the planned outcome of “Gender-responsive environmental management options that are well adapted to Global Environmental Change (GEC) are adopted by households (women & youth)” is a long distance from the corresponding impact of “Improved capacity of women and youth to participate in decision-making.” The “outcomes” for 2022 described above are another indication of this lack of realism, which is derived from a desire to placate donors by including impact-level targets in the CRPs that have proven impossible to track.

Key finding: The ToC as a concept has become institutionalized by the CRP.

The ToC is now considered a normal part of medium- and long-term planning in this CRP, as noted by the ISC in its 2019 meeting: “Last year we were concerned about the Flagships’ understanding and ownership of ToC. We are pleased to note there has been a very significant improvement in this area, to the extent where ToC is now becoming institutionalized and embraced by the Flagships.” Several interviewees confirmed that planned work is always assessed against the ToC to ensure its alignment with overall objectives. However, the ToC’s operational usefulness is less evident for the reasons outlined above and because it is perceived as top down. This situation has led to the development of product-line ToCs, which entail a more bottom-up approach to representing the desired change process.

¹⁹ The original ToC has been adapted over time to reflect changes in the context and to improve its quality. The analysis here relates to the current version of the ToC.

Key finding: The ToCs have evolved over time to take account of changes in contexts, emerging opportunities, and limitations and to improve their quality and relevance.

In addition to the adjustments made to the FPs as described in section 2.2.3, the ToCs have evolved over time to take account of changes in contexts, emerging opportunities, and limitations, and with a view to improving their quality and relevance. For example, FP3 revised its overall ToC and developed cluster and product ToCs during meetings in Tunisia and Vietnam in 2018 and 2019 respectively, reflecting a more demand-oriented approach, a stronger focus on prioritization at different scales (on-farm, large-scale, global), and ex-ante/ex-post impact assessments. In the case of FP4, the most significant changes include those made to the planned outputs in CoA1 and CoA3. The reformulation of those outputs reflects changes in the context such as lack of priority or funding for certain planned areas of research, including removal of the original OP1.2 (“Frameworks for assessing multiple environmental footprints for specific packages of technologies and interventions”) and of the original OP3.3 (“to develop and support the implementation of viable PES schemes”) and the corresponding outcome. In addition, changes were introduced to improve the formulation of some outputs that were in effect outcomes; for example, OP3.1 was formulated as “Improvements in land tenure to improve land use management for reducing land degradation” and was revised to “Tools for land and resource governance frameworks for livestock systems.” In the case of FP5, major changes were made to the original ToC, reducing its scope significantly; the original five clusters were reduced to four, the focus on resilience was removed, and outcomes were limited to the four priority countries. All original outputs were reformulated to reflect this reduced scope, while youth was introduced as a new area of work (though its formulation as an output is peculiar: “Youth in livestock”).

2.5 Cross-Cutting Issues

2.5.1 Capacity Development

Finding: Much capacity development activity was observed, but the degree to which it is impactful or strategic is hard to discern.

There is evidence of excellent capacity development (CapDev) at numerous levels in the CRP, including among farmers, other non-state stakeholders, national state actors, international actors, and CGIAR staff. The role of CapDev and its inclusion in programmatic work is hard to disaggregate and measure at the level of the CRP. CapDev activities are built into CRP activities at various levels and monitored and reported by CRPs as outputs, but how many of these are from co-funded bilateral activities is impossible to tell. The CRP considers all funding to be part of the funding ‘portfolio’ and thus includes W1/2 and bilateral funding as contributing to the overall outcome. Therefore, all CapDev is reported together as a single output. CapDev actions and outputs are broad and highly varied, ranging from PhD training at the highest academic level to extension and farmer-facing training including meetings, training events, community consultations, e-learning, and mobile phone applications. The reported activities are summarized in Table 8. The CRP’s approach to CapDev was summarized in 2019 (Dror et al., 2019) following a series of country needs assessments and some FP needs assessments (Uggla, 2020). Uggla does not explain how the quality and impact of the proposed US\$22.625m investment might be assessed²⁰. It is also silent on national capacity development targets and strategies, giving it a somewhat top-down feel.

Table 4. Reported volume of capacity development activities

Year	Type					
	Short-term		Long-term		Of which PhD	
	F	M	F	M	F	M
2017	1,650	10,066	7	5	3	4
2018	1,020	1,213	15	20	3	4
2019	4,279	9,209	12	20	7	5
Subtotal	6,949	20,488	34	45	13	13

²⁰ Dror, I., Kang’ethe, E. and Lemma, M. (2019). CGIAR Research Program on Livestock Capacity Development Strategy. Nairobi, Kenya: ILRI.

Uggla, A. (2020), “Review of Capacity Development activities within the Livestock Health Flagship of the CGIAR Research Program on Livestock”.

Total	27,437	79	26
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Source: Livestock CRP annual reports.

Note: Long-term includes all academic degrees, including PhDs. Short-term is all other types of training. The CRP requested that the following clarification be included as a note: "1) In 2017, the exact number of women participants in short-term trainings was not always recorded (many activities pre-dated the introduction of the common reporting indicators). Therefore, the figures given for women are only those where data was gender disaggregated and are probably understated. 2) In 2018, the number of PhD students is also included in the long-term training numbers. The MARLO categories were changed in the AR 2019 to avoid this double counting. 3) As per the CGIAR common reporting indicator guidance, short-term training includes one-off training events, co-creation events, knowledge exchanges, scaling activities, trials and studies."

The CRP has huge potential for building capacity and thereby improving the impact of its high-quality scientific insights and innovations. However, the CRP has struggled to find a way to measure the impact of its capacity beyond a head count of participants. There are many capacity development activities associated with trying to scale up the application of different platforms and approaches, particularly in the CRP focus countries. Where participatory methods are being used (as they are in all FPs; one example is the "community conversations" in FP2), actors (farmers, extensionists, policy makers, NGO staff) all get training, and these numbers are added to capacity development metrics. At another level, the CRP produces and disseminates a wide range of extension materials using an equally wide range of approaches (examples are present in all FPs). Interviewees answered questions about capacity building in a variety of ways, suggesting that there is no common understanding of the CRP's capacity development approach or ethos.

Several funders and partners interviewed were concerned that CRP activities would crowd out national capacity-development plans rather than supporting them (or creating them where they do not exist). This highlights a more fundamental challenge with defining the CRP's role in capacity development going forward and measuring how this role is achieving its aims. What are the capacity-building aims of the CRP? How will CRP management know when this aim has been achieved? Ultimately, we suggest that a program like the Livestock CRP should seek to build capacity among national actors to enable them to undertake research independently. Under such a goal, a structured and measurable plan would be needed in each country to assess progress. For postgraduate researchers, we find the general approach to developing skills ad hoc and project driven. Each student's experience is different and highly dependent on their host organization or personal background. We conclude that more could be done to create a collegiate postgraduate learning experience in CGIAR and in CRPs with a set of learning activities that are more closely aligned with national postgraduate programs and aims.

2.5.2 Climate Change

Key finding: The CRP may have missed an opportunity to set the agenda on climate change by collating evidence from all the relevant FP outputs.

It is hard to see an aspect of the CRP that is not relevant to climate change. Activities associated with productive efficiency (e.g., FP1, FP2, and FP3) are almost universally related to sustainable intensification, and FP4 and FP5 consider the complex interactions between livestock, people, the environment, and the overall food system. While climate change was not considered a specific cross-cutting dimension in the 2017 AR, it was in 2018 and 2019. The language of climate adaptation and mitigation features in a number of activities reported, particularly with respect to FP4, for which tackling climate change is a central mandate.²¹ Many individual products "map" to climate change (e.g., evaluating heat stress in pigs, conducting baseline data gathering with CCAFS, recommending climate-smart feeding regimes, and helping governments collect GHG data). A number of the SRF targets are climate related, but evidence of how the many climate-related activities contribute toward those targets is not available. Somewhat surprisingly, the Livestock CRP ToC narrative is silent on the subject of climate change. The ToCs for FP1, FP2, and FP3 do not mention climate change, but they do consider related issues (e.g., resilience, productivity, and carbon emissions). FP4 is more explicitly concerned with environmental management and impacts of livestock on the environment; as noted above, it addresses related aspects such as GHG emissions and land degradation but does not have a Sub-IDO that mentions climate change. Progress with regard to tools and guidance on policies and programs for climate resilience and mitigation in livestock systems has also been limited. During the interview with the Independent Steering Committee, members said that they considered the CRP's focus on climate change

²¹ Livestock CRP Annual Report 2019, p. 12.

to be “missing” and that an opportunity had been missed to embrace climate change across the FPs to bring forward adaptation and mitigation factors.

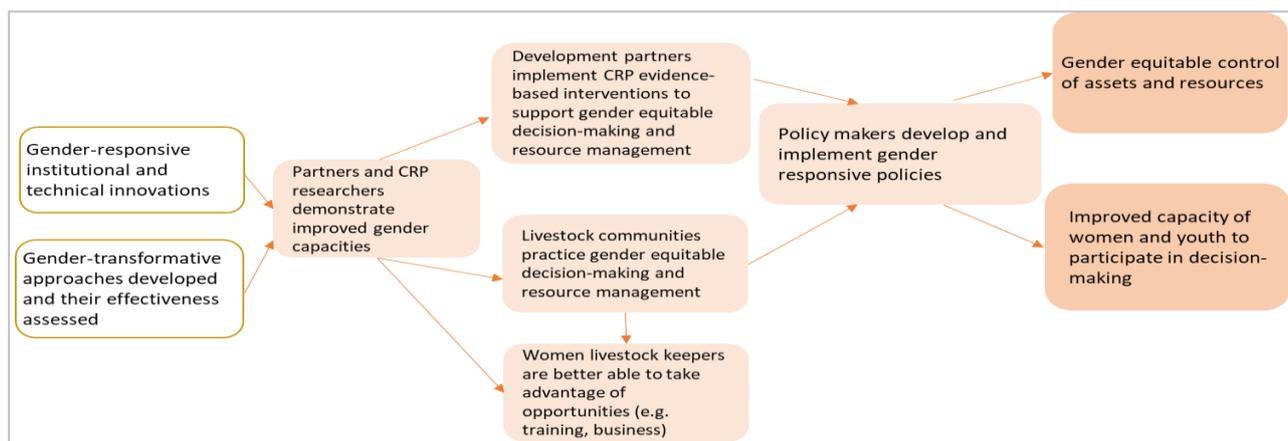
2.5.3 Gender

Key finding: Integration of gender has improved over time with some strong achievements, but there is still work to be done.

The CRP’s draft gender strategy has recently been reviewed by the PMC and is being revised to take account of observations. In summary, the strategy focuses on two main areas of work: (1) gender-transformative approaches, and (2) packages of gender-responsive institutional and technical innovations. The aim is to move away from gender mainstreaming and toward more comprehensive approaches based on a thorough understanding of the totality of gender dynamics surrounding livestock and of the needs and aspirations of both men and women, including barriers and opportunities. FP5 has done a lot of work to shift the focus away from mainstreaming gender into each of the FPs to making gender a collective responsibility of the CRP. The presence of a gender expert on the PMC is perceived as having greatly facilitated this work, as has the embedding of gender focal points in each of the FPs (with the exception of FP3), but the CRP is still perceived as being too reliant on relationships with specific gender “champions” rather than having created systemic buy-in.

The underpinning ToC requires further work as it is too vague and lacks any assumptions, and not all links are evident. For example, how will “gender-responsive institutional and technical innovations” and “gender-transformative approaches developed and their effectiveness assessed” lead to “partners and CRP researchers demonstrate improved gender capacities”? How does “women livestock keepers are better able to take advantage of opportunities” lead to “policymakers develop and implement gender-responsive policies”?

Figure 1. Livestock CRP Gender strategy ToC



Notwithstanding the delayed production of the strategy, there have been a number of achievements with regard to the integration of gender into the FPs. FP1 began articulating more clearly its commitment to this work during the course of this CRP, associated with a change in leadership (and leadership gender). The approach is well attuned to the language of gender-led breeding, with more attention being paid to gender roles in livestock keeping and a greater emphasis on animals more likely to be kept by women (e.g., poultry and small ruminants). A lot of the work that drives selection of genetic material and important traits is now being validated from the perspective of both men and women livestock keepers. The net impact of this shift will not be seen in this CRP but will influence future breeding impacts. There is a fair amount of evidence that FP2 has adjusted to a new gender- and youth-driven orientation through the adoption of holistic animal health strategies that incorporate gendered aspects. This approach should improve the quality of future research outputs. However, the approach used—innovation platforms and various innovation approaches—are (1) expensive and (2) often dominated by male actors such as male extension workers. This method is also very resource intensive and thus may be unsustainable. FP3 has adopted the suggested approaches, but there is not much evidence on the outcomes yet. The in-depth analysis of OICR 2767 on improved feeding practices in the Kenyan dairy sector clearly has implications for gender and youth, but those interviewed were all men, who all agreed that women were impacted by forage decisions but were all uncertain what to do about that. Trait development has taken on gender issues, but the results of this work are some time away. In addition to supporting the integration of

gender issues into the other FPs, FP5 has itself carried out some significant research, such as incorporating a gender perspective into the Livestock Master Plans (example of Bihar) and shifting the gender focus from household to policy level, promoting the adoption of the Women's Employment in Livestock Index (WELI), and leading "Community conversations: a community-based approach to transform gender relations and improve livestock management practices is adopted by research and development actors in Ethiopia," which began as a gender initiative but has since been taken up by the animal health team. The gender team has also been successful in leveraging funds from various donors such as the Bill and Melinda Gates Foundation (BMGF) and the International Development Research Centre (IDRC). The overall assessment, however, is that a lot of work remains to be done in the area of gender. According to some interviewees, the second round of CRPs has been less supportive of gender than the first round, when 10 percent of the budget had to be dedicated to gender, a gender strategy had to be in place for any funds to be received, and there was a system-level gender adviser. All of these conditions have been removed in the second round, and there is frequent criticism of the lack of funding and resources for gender work. Another concern is the high number of OICRs where gender is not even targeted (14 of the 23 OICRs produced to date [61 percent])—i.e., the activity was examined but found not to target the policy objective (Table 10).

Table 5: Number of OICRs with gender relevance not targeted, significant, or principal

Gender relevance	CRP level						Total
	FP1	FP2	FP3	FP4	FP5	(%)	
0 - Not targeted	3	4	0	4	3	60.9	14
1 - Significant	0	0	1	4	2	30.4	7
2 - Principal	0	1	0	0	1	08.7	2
Total	3	5	1	8	6	100.0	23

2.5.4 Youth

Key finding: Although a youth strategy exists, there is little evidence it is a priority.

One of the main points raised by the CRP's youth strategy is that most of the perceived challenges and opportunities for youth are not new, nor do they apply specifically to youth. For the most part, youth are not inherently different from non-youth, so the strategy is not about devoting an entire research program to youth but rather adding a youth "lens" to current and future research projects. In a few key areas, a more specific youth lens is deemed necessary—namely, access to land and finances, and migration. Progress in these areas has not advanced, however, and has been limited to a few specific research activities. These include the FP3 partnership with a large dairy company in Colombia to support its youth-centered education program of dairy producers, ICARDA's partnership with the NRAs extension system in Ethiopia to train youth as disseminators of improved sheep-fattening technologies and practices, FP4 and CCAFS research on how to more effectively include youth in dairy value chains, and FP5's work on compiling existing data and information from projects with the objective of assessing the participation of youth in projects and livestock value chains. Youth participation is hard to estimate owing to the lack of age-disaggregated data (the limited data available show that youth participation is low, at 15 percent). Of note is the frequent lumping together of youth with gender—e.g., the sub-IDO says "improved capacity of women and youth to participate in decision making" even though the CRP's youth strategy acknowledges that the two groups are fundamentally different: "the categories of gender and youth share similarities, and gender and youth research can support each other. However, there are clear differences. Gender is embedded in feminist theory and has often been framed as an equity and moral issue first, and an economic issue second. Youth is often framed in terms of security and jobs. Moreover, women of all ages often face more systemic oppression than young men. Indeed, some of the disadvantages related to be a young person will decrease with age." Also of note is that 19 of the 22 OICRs produced did not target youth, where "not targeted" means that the activity was examined but found not to target the policy objective (Table 11).

Table 6. Number of OICRs with youth relevance not targeted, significant, or principal

Youth relevance	FP1	FP2	FP3	FP4	FP5	CRP level (%)	CRP level
0 - Not targeted	2	4	0	8	5	82.6	19
1 - Significant	0	1	1	0	1	13.0	3
2 - Principal	1	0	0	0	0	04.4	1
Total	3	5	1	8	6	100.0	23

3 Conclusions and Recommendations

3.3 Quality of Science

3.3.1 Quality of Research Inputs

3.3.1.1 Skills and Diversity

The broad range of skills available to the CRP adequately matches the skills needed for delivering the planned outputs and outcomes. Within the CRP a high proportion of leaders, principal investigators, and senior staff are from a narrower ethnic and academic background (broadly, from the US, Europe, Australia, or New Zealand) than might be expected from a normal population sample. More could be done to encourage individuals from diverse academic backgrounds and traditions to reach senior roles within the CRP. The CRP has a number of researchers who are at an early stage in their career, their home institutions could do more to nurture this resource. A system of support to junior researchers within a set of enabling policies (e.g., misconduct, mentorship, and career management policies) is a normal aspect of well-functioning research organizations.

Recommendations – System level: (1) In addition to gender data, the CRP should start to collate and share data on other aspects of diversity including ethnicity. These data could help the CRP address differences in its workforce. (2) The CRP should develop a clear definition of “junior researcher,” with programs to support and mentor underrepresented groups, and develop a cadre to maximize the value of this group. (3) A more comprehensive and unified common research misconduct policy is needed to address the potential for inappropriate academic behavior or abuse of power.

3.3.1.2 Gender and Age Profiles of Researchers

Gender data show a significant gender imbalance among CRP staff, particularly at the scientist and postdoc/junior scientist levels. Age and ethnicity data were not available to the review team.

Recommendation – System level: If an appropriate balance of gender, age, and ethnicity is a CGIAR aim, then data on these parameters should be collected and put in the public domain.

3.3.1.3 Infrastructure and Technology

The CRP has adequate access to suitable infrastructure and technology to complete its task. This infrastructure is sufficiently maintained. Resources are available in the CRP for recurrent costs of research.

3.3.1.4 Partnerships

The CRP has developed a wide range of partnerships with different sectors as appropriate to the activities undertaken and outcomes expected. In the more technical FP, there are examples of excellent private sector partnerships where technology has been developed at scale (e.g., the forage seed systems partnership with a private seed company in Mexico).

Recommendation – CRP actionable within 2021, CRP future research modality: Increased early engagement with suitable private sector partners in discovery and upscaling of technologies should be encouraged to release resources for more discovery science.

3.3.1.5 Finance

Funding of scientific endeavors across the CRP FPs has been adequate to address plans. While staff interviewed complain about the fund-raising effort, the high level of success of this approach seems to be working, with some notable large-scale donor investments that map through to the FP. There was no evidence that the CRP funding strategy has been detrimental to research quality (although one could equally argue that less time spent fundraising may have resulted in increased outputs). In assessing the value for money of the science, it is difficult to disentangle the relationship between inputs from earlier research, bilateral funding, and CRP funding. This situation makes ascribing outputs to inputs difficult and opens the potential for double dipping (reporting outputs in more than one place). Notably, some of this activity is intentionally designed in this manner and demonstrates collaboration and joint activity.

3.3.2 Scientific Process (including Partnerships)

3.3.2.1 Effectiveness of Partnership Strategy

The balance of partnership approaches taken is appropriate and relevant to the next-stage user in most cases. The relatively low level of uptake of some of the platforms, models, and systems developed in the CRP outside pilot areas does not necessarily mean that these are not high-quality products. With some products, a limited uptake can have a huge impact at scale if the right impact pathway is taken—food for thought when amending future ToCs or developing new ones.

Recommendations – CRP future research modality: (1) The CRP might consider promoting a more widespread application of theory of change to local and project-level users to encourage uptake of the approach and inclusion of a wider set of actors and agendas in research design and application for impact. (2) Future working methods should place more emphasis on inter- and multi-disciplinarity. Methods for encouraging such approaches among staff from all disciplines and among partners should be researched and implemented.

3.3.3 Quality of Outputs

3.3.3.1 Research Quality and Quality Control

We conclude that the existing quality control system may need some improvements. One way to do this would be to make improved research quality systems among partner organizations an expected outcome of the CRP.

Recommendation – CRP future research modality, System level: In future research programs such as the CRP, demonstrable measurement, and improvement in the research quality of partner organizations should be made an explicit and measurable aim.

3.3.3.2 Compliance

Compliance with national and international standards of research seems to be effectively managed. This is carried out by the centers rather than by the CRPs.

Recommendation – System level: (1) A transparent ethics accreditation system (e.g., a flag or mark) applied to all center outputs would help improve compliance. (2) A number of aspects of Qo4D, including compliance and legitimacy, should be developed and applied system-wide to provide a consistent basis for scientific quality.

3.3.3.3 Research Ethics

The Livestock CRP addresses research ethics through the processes of host centers. This system is adequate but not flawless, and therefore potentially threatens research credibility overall.

Recommendation – System level: The approach to research ethics should be of a consistently high standard across CGIAR. A single common approach would be less risky than the current system.

Recommendation – CRP future research modalities, System level: (1) The CRPs should set the example for high standards of research ethics, and therefore raising these standards among all research partners to match should be a global aim. There should be a system-wide approach to research ethics, with standard codes of conduct and approaches as well as mandatory training for all active research staff and managers. (2) Users of research products need to know that it has been created using the highest

standard of research ethics. CGIAR should research the possibility of an ethics accreditation system for research activities that can be linked in a transparent and traceable way to the research products.

3.3.3.4 Research Standards and Conduct

The apparent absence of guidance on research conduct or a mechanism for dealing with inappropriate conduct is an important omission in the system and requires urgent attention.

Recommendation – System level: A standard code of research conduct is needed across CGIAR, with a suitable process for managing research disputes and inappropriate conduct.

3.3.3.5 Early Career Researchers

We conclude that a more structured and defined approach to supporting early career researchers is needed and would be beneficial to both the CRP and CGIAR as a whole.

Recommendation – System level: (1) CGIAR should agree a standard definition of what constitutes an early career researcher. (2) There is scope for a CGIAR-wide approach to nurturing and developing early career researchers. A review of the system-wide approach to recruitment, development, and retention of early career researchers is proposed. (3) The CRP/CGIAR should consider implementing access to a universal academic/career mentorship scheme, particularly for underrepresented or vulnerable groups. This scheme should be separate from line management of junior staff.

3.3.3.6 Volume of Research Outputs

The CRP has produced a substantial volume of peer-reviewed outputs, as might be expected from the number of scientific staff and volume of research funding. Papers published using CRP resources still get into non-ISI-ranked journals. Up to one-third of peer-reviewed outputs from the CRP are not open access. These two quality issues need to be resolved.

3.3.3.7 Outputs per Active Researcher

For top-performing researchers, the balance between publication, active research, grant winning, research leadership, and other desirable traits of high-quality researchers is a delicate one. The quantity of publications per active researcher seems about right given the range of expectations and tasks undertaken.

3.3.3.8 Quality of Research Outputs

Some high-quality and impactful publications are still inaccessible to academic scrutiny. Unless this is for reasons of intellectual property management, the policy of all open access for CRP outputs should be vigorously applied in future.

Recommendation - CRP actionable within 2021, CRP future research modality, System level: CRP quality managers need to track peer-reviewed research outputs more rigorously and systematically to ensure that 100 percent are open access (where commercially possible) and in ISI-ranked journals.

3.3.3.9 Research Collaboration

The CRP demonstrates a high level of research collaboration with an appropriate range of countries. There are signs of strong co-authorship clusters, wide dispersion of international collaboration, and interdisciplinarity. These are all desirable.

3.3.3.10 Quality of Journal

The CRP has published in a wide range of high-quality journals, including in the top journals in the field.

3.3.3.11 Technical Publications

The volume and quality of technical publications are high, but the quality, while mostly good, is variable, and the purpose of the publication is not always obvious. Quality improvement could be achieved by peer review of a larger number of these products, even if this is only internal.

Recommendation - CRP future research modalities, System level: The quality, and thus the impact, of technical publications and physical products could be improved by a more open, rigorous, and

transparent approach to review (beyond line managers and principal investigators). More systematic peer-to-peer review is recommended. A system of indicating how these products have been reviewed would demonstrate CRP commitment to quality control and continuous improvement.

3.3.3.12 Physical Products

The CRP produces appropriate physical products with mostly high value to next-stage users and potential for capacity development. There is some variation in quality, which could be addressed with a more consistent approach to internal review and quality control.

3.3.3.13 Communications Products

The volume, range, and potential for impact of the CRP communications products are high. In some cases, it is hard to see what the aim of the communication product is or to understand how its quality has been assessed internally. Some guidance on blog content for CRP collaborators would be useful.

Recommendation - CRP future research modalities, System level: The CRP could consider more quality control over communications products to improve consistency and promote better content and clearer association of content with research aims. It would be useful if each type or format of communication material had a clearly stated purpose. It is not apparent how these materials are assessed for quality.

3.4 Effectiveness

3.4.1 Achievement of Planned Outputs and Outcomes

3.4.1.1 Progress Towards Planned Outputs and Outcomes

There have been some good progress and achievements across FPs as well as potential areas for development, but there have been delays and shifts in priorities.

All FPs can point to significant achievements, many of which are the result of work initiated under the L&F CRP. There have, however, been delays as a result of overly ambitious plans, shifting priorities, and funding shortfalls, with some key areas of research receiving less attention than originally planned.

Recommendation - CRP actionable within 2021: The inevitable pull to carry out new research needs to be counterbalanced by a push to build on the numerous promising areas of research that have been addressed by this CRP and to extrapolate lessons to inform the direction of future work.

3.4.1.2 Comparing Planning and Reporting Documents

There are inconsistencies between planning and reporting documents.

Planning and reporting documents are not structured around the ToCs, so the link between planned outputs and outcomes as identified in the ToCs and reported progress is not feasible. Furthermore, results described in the key planning document, the POWB, do not systematically match the results reported in the ARs, further complicating assessment of progress.

Recommendation - CRP future research modality: Indicators should be identified to track progress against the results identified in the ToCs, and planning and reporting documents (POWBs and ARs) should be synchronized.

3.4.1.3 Using Metrics to Review Progress

The current suite of metrics fails to provide a coherent overview of progress.

The lack of indicators (and corresponding monitoring system) mapped to the CRP and FP ToCs has resulted in the emergence of a suite of metrics heavily focused on milestones and common results reporting indicators (CRRIs), which do not adequately capture progress toward higher-level goals and do not provide a coherent overview of progress. Various questions also arise about the relevance and robustness of some of these metrics to measure the performance of CRPs and FPs.

Recommendation - CRP future research modality: Priority should be given to developing a robust and relevant system of ToC-linked indicators to map the progress of future CGIAR programs. There is scope to better exploit some of the current CRRIs (innovations and policies) for that purpose.

3.4.2 Demonstrated Importance of Outcomes

3.4.2.1 Long-term Impacts from CRPs

OICRs have potential to reveal long-term impact narratives of scientific and technical innovation.

OICR #2767 (“Improved cattle feeding practices in nine Kenyan counties, resulting in increased milk productivity for close to 80,000 farmers, with likely improved income and livelihoods”) is a great example of how sets of innovations and technologies can align with developmental investment and capacity building to make real change at scale. Better genetics for dairy animals, improved health management, new breeds of forage grass, clearly defined and successful business models, and strong collaboration with government and nongovernment partners have all come together to jump-start a whole subsector in rural Kenya.

3.4.2.2 Resources to Deliver Development Objectives

It is not sufficient to just deliver the science; it is essential to ensure sufficient resources, both financial and human, to allow that science to deliver on development objectives.

OICR #3164 (“adoption of woreda participatory land-use planning (WPLUP) in pastoral areas by the government of Ethiopia”) reports on the joint elaboration and uptake by the Government of Ethiopia of “The Integrated Local-Level PLUP” manual, which is of good quality and highly appreciated by all partners interviewed for this review. There is clear commitment within the government to rolling out this process, though whether this commitment is fully embedded within the ministry is not certain given the lack of funding allocated from federal and regional levels for its rollout. The key lesson learned from this exercise is that it is not sufficient to just deliver the science; it is essential to ensure sufficient resources, both financial and human (including capacities) to allow that science to deliver on its final objective—in this case, more productive and equitable management of natural resources and reduced land degradation. Without the funding secured for the rollout of PLUP to other woredas, there is a strong risk that this manual will simply end up on the shelf. This OICR represents a good example of the missing focus on economics and the cost implications of innovation rollout.

Recommendation - CRP actionable within 2021 and CRP future research modality: Serious efforts should be made to support the Government of Ethiopia in its efforts to secure funding for the rollout of PLUP to at least some other woredas in order to keep momentum and demonstrate the concrete benefits of PLUP. The high level and quality of partnerships established for the elaboration of the manual should have extended to partners willing and able to take it to the next stage.

3.4.3 CRP Management and Governance

3.4.3.1 Management Flexibility

CRP and FP management have proven to be adaptive to changing circumstances. There is consensus among those interviewed that CRP management has been effective in responding to the challenges and risks associated with shifts in priorities and financial shortfalls. In addition, the move to a more decentralized form of management in the second phase of the CRP gives more autonomy to FP management than was the case in the preceding F&L CRP. This allows the FPs to address changing contexts, challenges, and priorities in the annual planning exercises and to leverage the necessary funds. Numerous examples were put forward to demonstrate this adaptability on the level of both the CRP and FP management.

3.4.3.2 Priority Country Programs

The priority country programs are proving promising on a number of fronts, though they are still in the early stages of development.

The priority countries are serving as laboratories for testing the concept of delivering science to users by demonstrating that the research-to-impact process can be accelerated by having FPs combine efforts in selected locations and go to scale. Although work is still in the early stages (started in 2019) and varies between countries, there are some promising signs, such as increased intra-FP collaboration, better alignment with end-user needs, and partners (government, private sector, and donors), and improved potential for scaling.

Recommendation – CRP actionable within 2021 and CRP future research modality: Exit strategies need to be developed as soon as possible to ensure the smooth continuation of the country programs. Given the promising initial signs, it is recommended that the country-coordinated focus be maintained in the new CRP structure, that additional resources be allocated to this important work, and that the current focus on learning and sharing of that learning be reinforced and extended to other countries.

3.4.3.3 Cross FP Coordination

CRP management structures are not effective in promoting cross-FP coordination and learning.

Though the increased autonomy of FPs under this CRP is assessed positively, the flipside of this management shift is reduced collaboration among FPs and a more siloed approach. FP leaders would appreciate more engagement in decision-making—e.g., through participation in the PMC—and more opportunities to interact with each other. As regards learning, there is a strong perception among those interviewed that this is not given sufficient priority. The current reporting systems (including MARLO) are considered very time consuming and do not have a learning focus. The opportunities for learning through evaluations and impact assessments are extremely limited owing to insufficient resources, researchers' inherent conflict between the drive to produce innovations and the interest in carrying out evaluations, and donors' interest in the adoption of innovations and technologies rather than the assessment of impact.

Recommendation – System level: More consideration needs to be given to learning through both improved reporting systems and more independent impact assessments.

3.4.4 Progress Along the ToC (CRP and FPs)

ToCs have now become the norm within this CRP, though mainly for planning purposes. More could be done to improve their usefulness during implementation.

3.4.4.1 ToC Quality

The quality of the ToCs is acceptable but could be improved to make them more useful.

While the overall logic of the CRP and FP ToCs is reasonable, they suffer from weaknesses that have undermined their usefulness as an operational tool for FP and CRP management. First, the language used and the planned results²² are not consistent across the different versions of the ToC (narrative versus diagram), giving rise to confusion. Second, the formulation of some results is not SMART²³—e.g., it is not clear how some of them would even be measured. The distinction between research and (near) development outcomes introduces an element of overlap, and it is not clear how this distinction adds value to the ToC. Assumptions are generally focused on external partners, and the ToCs do not have any indicators to allow progress to be tracked. The relevance of the “outcome 2022” targets to a five- to six-year research-based program is questionable, as they are not being tracked and do not have baselines.

Recommendation – CRP actionable within 2021 and CRP future research modality: At this stage in the CRP, it is not considered advisable to spend time revising the various ToCs. However, for the future CGIAR programs, it is recommended that more time and resources be dedicated to developing high-quality ToCs to ensure their usefulness throughout the programs' life cycles.

3.4.4.2 ToC and Long-Term Change

The ToC are overly ambitious and reflect the broader problem of trying to capture the long-term change process from innovation and basic research to applied science or technology delivery and ultimately to the improved well-being of smallholders.

The time required for an innovation or piece of research to pass through the different stages from discovery and proof of concept to impact on people or the natural environment is far longer than the lifecycle of a CRP. It can take, on average, at least 8–10 years. Donor insistence on tangible results on the ground has put pressure on the CRPs to incorporate development outcomes into their respective ToCs, rendering these unrealistic and thereby undermining their usefulness. This lack of realism is particularly evident in the gap between planned outcomes and impact (referred to as research and [near] development outcomes and sub-IDOs in the FP ToCs). The “outcomes” for 2022 described above are

²² Where results cover all three levels of output, outcome, and impact.

²³ Specific, Measurable, Achievable, Relevant and Time-bound

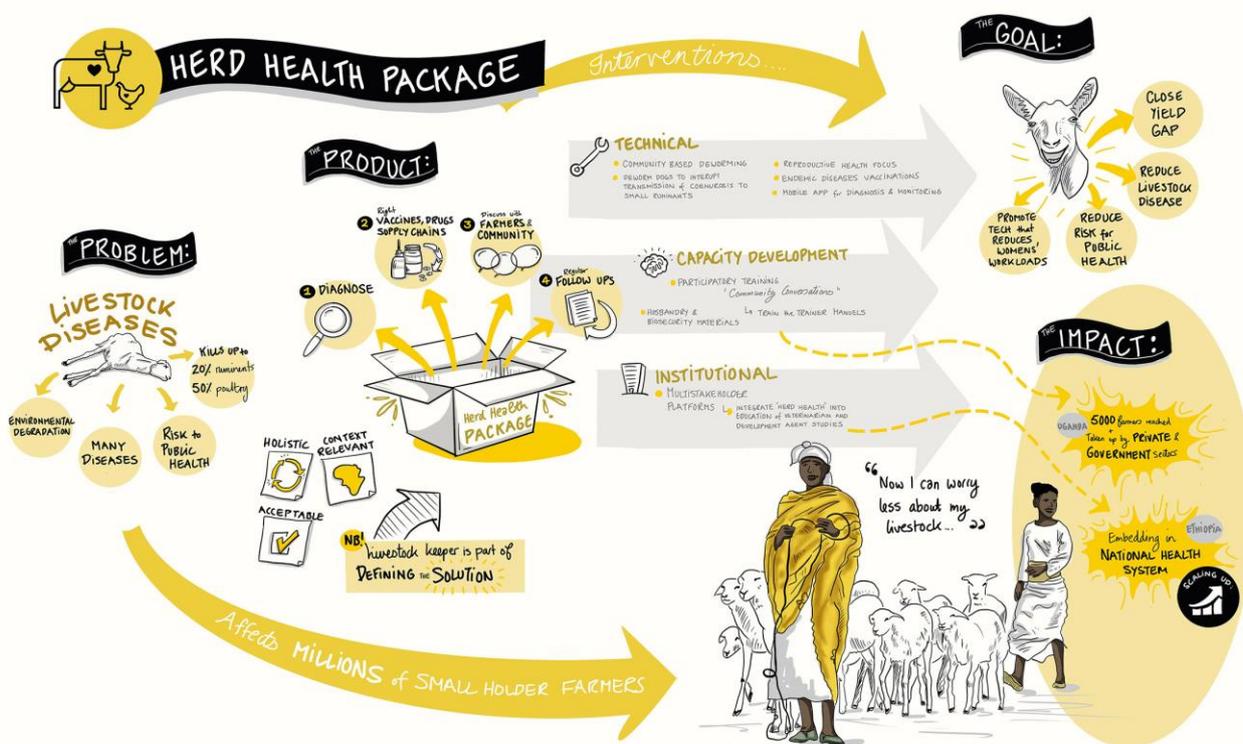
another indication of this lack of realism derived from a desire to placate donors by including impact-level targets into the CRPs, which have proven impossible to track.

Recommendation – System level: The role of CGIAR on the long road from basic research to impact on the ground (at the smallholder level) needs to be clarified and better captured by the ToCs.

3.4.4.3 ToC Institutionalization

The ToC as a concept has become institutionalized by the CRP: now considered a normal part of medium- and long-term planning. Several interviewees confirmed that planned work is always assessed against the ToC to ensure its alignment with overall objectives. However, its operational usefulness as a tool is less evident for the reasons outlined above and because it is perceived as top down. This has led to the development of product-line ToCs, which involve a more bottom-up approach to representing the desired change process (see Figure 2 for example).

Figure 2: TOC for "Herd Health Package" product line



3.4.4.4 FP ToCs and Flexibility

The FP ToCs have evolved over time to take account of changes in contexts, emerging opportunities, and limitations and to improve their quality and relevance. In addition to the adjustments made to the FPs as described in section 2.2.3, the ToCs have evolved over time to take account of changes in contexts, emerging opportunities, and limitations.

3.5 Future Orientation

In addition to the findings presented in section 2 and the recommendations put forward in the preceding sections of this report, the following additional insights are put forward regarding the future effectiveness of the CRP and FPs within the life of the program (through 2021).

As noted above, all FPs can point to significant achievements, many of which are the result of work initiated under the L&F CRP. To the extent possible, these achievements should be pushed to the next level within the remaining timeframe—e.g., innovations currently at level 2 should be pushed to level 3, and policies at level 1 should be pushed to level 2. As regards learning, an interesting example is the

“Review of recent CGIAR initiatives on the management and governance of pastoral rangelands,” which documents five examples of partnerships between government and CGIAR that have led to new policies, programs, and approaches for governance and management of rangelands. This report is a good example of a more holistic, consolidated approach to research that moves away from a fragmented, more siloed one. By pulling together disparate yet strongly related strands of research, a more coherent overview of research findings on a given topic can be developed to facilitate learning. This synthesis approach could be applied to other areas of the CRP’s work. Another area that warrants more attention in the short term is impact assessment. To the extent possible, FPs should dedicate sufficient resources to assessing, where feasible and useful, what has worked and what has not, even if, as in the case of the country programs, the completion of this work may not be achieved within the life cycle of this CRP. Many of the impacts from genetics, animal health, and feed/forage (especially genetics) research will occur long after this CRP ends, so it is important to put in place appropriate mechanisms now to ensure tracking of impacts.

Although work on the delivery of integrated packages of technology is still in the early stages (it only started in 2019) and varies between countries, there are some promising signs, such as increased intra-FP collaboration, better alignment with end-user needs and partners (government, private sector, and donors), and improved potential for scaling. A number of challenges were also identified, such as the additional effort required to coordinate and integrate activities among FPs and the fact that this effort is not appreciated in researchers’ regular performance indicators and reviews. Furthermore, insufficient resources and the limited time frame of the priority country programs, which have been further disrupted by COVID-19, give rise to concerns that the goal of achieving impact through an integrated approach is unrealistic within the remaining time frame. Interesting lessons have emerged from the first “CRP Livestock cross-country Learning Week,” held in April–May 2020; these serve as good examples of the useful insights that can be gleaned from such learning exercises, and they should be disseminated widely. As noted above, exit strategies need to be developed as soon as possible to ensure the smooth continuation of the country programs. Given the promising initial signs, it is recommended that the country-coordinated focus be maintained in the new CRP structure, that additional resources be allocated to this important work, and that the current focus on learning and sharing of that learning be reinforced and extended to other countries.

3.6 Cross-Cutting Issues (Capacity Development, Gender, Climate Change, and Youth)

3.6.1 Capacity Development

The capacity-building aims of the CRP are not clear, and the means of measuring attainment of capacity development (CapDev) targets are not built into CRP design. For postgraduate students, we conclude that a more structured learning experience would benefit students and increase the impact of this form of capacity development.

Recommendations – CRP actionable within 2021: (1) A strategic review of capacity development is needed to provide clear guidance on the aim of the CRP in this regard and its relationship in achieving this aim with other key actors such as national universities and NARSs. (2) The CRP needs to identify its targets for capacity development and how it might measure progress toward achieving them. These targets then need to be aligned with needs at the national level.

Recommendations – System level: (1) For postgraduate students, CGIAR should pool resources between centers and CRPs to create doctoral training colleges with clear learning structures and research themes and aims. This effort would improve student experience and build a future cadre with a sense of identity aligned with the overall aims of CGIAR. There is no consistent definition, approach, or measurement of capacity development across the CGIAR System. CGIAR should define what it seeks to achieve through capacity development and then set out a means to measure whether this aim is met. (2) CGIAR should pilot the alignment of CapDev activities with the formal qualifications required by NARSs and the typical career paths there.

3.6.2 Climate Change

The CRP may have missed an opportunity to set the agenda on climate change by collating evidence from all the relevant FP outputs.

It is hard to see an aspect of the CRP that is not relevant to climate change. Activities associated with productive efficiency (e.g., FP1, FP2, and FP3) are almost universally related to sustainable intensification, and FP4 and FP5 consider the complex interactions between livestock, people, the environment, and the overall food system. While the language of climate adaptation and mitigation features in a number of activities reported, particularly with respect to FP4, for which tackling climate change is a central mandate, evidence of how the many climate-related activities contribute to mitigating the effects of climate change is not readily available.

Recommendation – CRP actionable within 2021: Sufficient resources should be set aside in the remaining time frame to consolidate the results of the diverse pieces of CRP work specifically related to climate change mitigation.

3.6.3 Gender

Integration of gender has improved over time with some strong achievements, but there is still work to be done.

Women remain under-represented in scientific and management roles: this is even more the case for black, Asian, and minority ethnic (BAME) staff. FP5 has done a lot of work to shift the focus away from simply mainstreaming gender into each of the FPs to making it a collective responsibility of the CRP. The presence of a gender expert on the PMC is perceived as having greatly facilitated this work, as has the embedding of gender focal points in each of the FPs (with the exception of FP3). There have been a number of achievements with regard to the integration of gender into all of the FPs and in the leveraging of funds from various donors. The overall assessment, however, is that a lot of work remains to be done in the area of gender. According to some interviewees, the second round of CRPs has been less supportive of gender than the first round, when 10 percent of the budget had to be dedicated to gender, a gender strategy had to be in place for any funds to be received, and there was a system-level gender adviser. All of these conditions have been removed in the second round, and there is frequent criticism of the lack of funding and resources for gender work. Success is still too reliant on the relationships built with specific gender “champions” rather than systemic buy-in. Another concern is the low number of OICRs where gender is not even targeted (14 of the 22 OICRs produced to date [64 percent])—i.e., the activity was examined but found not to target the policy objective.

Recommendation – System level: The strong achievements in integrating gender into CGIAR work should not be lost. In order to continue the current momentum, consideration should be given to reinstating the requirement that 10 percent of the budget be reserved for gender-related work and that a viable and effective gender strategy be in place before any funding is received, as well as maintaining the inclusion of gender focal points within each flagship (or whatever form the new CRPs take).

3.6.4 Youth

Although youth is a stated CRP priority, there is little evidence of this in practice.

One of the main findings of the CRP’s youth strategy is that for the most part, youth are not inherently different from non-youth, so there is no need to devote an entire research program to youth. Rather, a “youth lens” should be added to current and future research projects, with the exception of a few areas where a more specific youth lens is deemed necessary.

Recommendation – System level: A decision should be made as to whether it would be more appropriate to remove youth as a priority rather than doing a weak job of pursuing it as a priority.

4 Lessons Learned

The following are some of the key lessons learned from this review. **The role of CGIAR** on the long road from basic research to impact on the ground (at the smallholder level) needs to be clarified. Where does the role of scientists and researchers end and the role of other partners begin? CGIAR currently fulfills a role as the interface between science and other key players such as partner governments, development partners, and end users, though in many ways these roles are becoming blurred. A longer-term vision better aligned with next- and end-user priorities and based on early engagement with these partners is key to ensuring that the One CGIAR vision (“scientific innovations deployed faster, at a larger scale, and at reduced cost, having greater impact where they are needed the most”) becomes a reality. Clear divisions of labor—based on comparative advantage and incorporating a more multidisciplinary approach and a broader spectrum of actors including the private sector—will be needed.

Impact is delivered through **partnerships**—e.g., by engaging with potential funders from the outset to ensure scaling once an innovation is produced. More should be done to embed the science in more downstream processes along these lines. Early engagement and dialogue with in-country donors is key. The CRP’s relationship with the **private sector** in developing and upscaling innovation appears confused: despite some great examples of private sector partnerships in this CRP, a more systematic approach to private sector engagement at an early stage (e.g., discovery) might bring wider impact.

Clarity on the **balance of effort** expected between fundamental research, applied research, capacity building, scaling, and development activities are needed. Instead of pushing scientists out of their comfort zones, more reliance on multidisciplinary teams and partnerships can help achieve these broader development goals.

To enhance learning, future similar research programs should be designed with future impact assessment in mind from the outset. Better impact assessments require long-term planning—e.g., collecting baseline, midline, and endline data—and secured funding. Stronger ties with next users are also needed from the outset to ensure not only that innovations are taken up, but also that those users set up the necessary mechanisms, such as donor programs, to track the impact of applied innovations.

The lifecycle of an R4D program is de facto much longer than a development program, and this needs to be factored into planning to manage expectations. Funding for priority areas must be secured over the long term, using a **multi-annual perspective** rather than the current system of annual allocations. A longer-term funding mechanism (e.g., more than three years) is recommended for some of this more fundamental research (e.g., animal and forage genetics).

Local anchoring through local science is key to success and sustainability. Clear and measurable targets for engagement and capacity building of national scientists to take over the research agenda are needed to create clear exit strategies. CGIAR needs to think carefully about its long-term capacity development aims. Who will conduct high-level, nationally, and globally important research in the future? What needs to be done to create a more balanced relationship between CGIAR and its research partners, particularly the NARSs and different aspects of the private sector?

Through its gender activities, the CRP demonstrates how a **cross-cutting theme** can drive important changes in the strategic direction of research. This approach needs to be adopted for other themes important to sustainable development, including climate change.

Much more can and should be done by the CGIAR System to set the pace of change in society. Future evaluations would benefit from the collection of **more data** on the demographic profiles of staff and collaborations (including ethnicity). This would enable future assessors to consider CGIAR’s progress toward attaining a suitable balance of its human resources that is more reflective of the global society that it aims to support.

Impact narratives are a good idea for assessing long-term results from a range of interventions, but more thought needs to go into their content so that some element of causality can be ascribed to the inputs provided.

Annexes are available here:

bit.ly/LIVESTOCK-CRP2020-Annex

A 2-page brief is available here:

bit.ly/LIVESTOCK-CRP2020-Brief



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