



Photo by Georgina Smith / CIAT

Quality of Research for Development in the CGIAR Context

October 2017



Independent
Science and
Partnership
Council

Brief Number 62

BACKGROUND AND CONTEXT

Since its last reform in 2010, the CGIAR has shifted the emphasis from primarily addressing agricultural science and technology problems to deliberately contributing to development outcomes¹. The CGIAR now has three System Level Outcomes (SLOs) that are linked to the achievement of the Sustainable Development Goals (SDGs)². This approach necessitates concerted action by diverse stakeholders, i.e. new and more strategic partnerships for Agricultural Research for Development (AR4D)³. It also requires building knowledge from evidence, integrating knowledge from different disciplines, and translating that knowledge into action⁴. Science-based knowledge is more likely to be effective for sustainable development if it is respected and perceived as credible, salient and legitimate⁵.

Discussions leading up to and during the CGIAR reform highlighted the number of committees (e.g. Centre Boards and CRP Steering Committees plus the Independent Science and Partnership Council and the Independent Evaluation Arrangement) involved in the oversight of CGIAR research and their differing definitions of 'science quality'. It was suggested that the ISPC was in the best position to facilitate System-wide agreement on the nature and assessment of quality of science, which was broadened to address Quality of Research for Development (QoR4D) to account for the likelihood of achieving development outcomes in addition to scientific credibility. This was done through a consultative process involving representatives from entities across the System involved in managing or assessing science quality⁶.

¹ CGIAR (2011). A Strategy and Results Framework for the CGIAR. http://library.cgiar.org/bitstream/handle/10947/2608/Strategy_and_Results_Framework.pdf

² CGIAR (2015). CGIAR Strategy and results framework 2016–2030. <http://library.cgiar.org/bitstream/handle/10947/3866/2pager.pdf?sequence=6>

³ ISPC (2015). Strategic study of good practice in AR4D partnership. http://ispc.cgiar.org/sites/default/files/ISPC_StrategicStudy_Partnerships.pdf

⁴ Clark, W., van Kerkhoff, L., Lebel, L., and Gallopin, G. (2016). Crafting usable knowledge for sustainable development. *PNAS* 113, 4570-4578.

⁵ Cash, D.W., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N., Guston, D.H., Jaeger, J. & Mitchell, R.B. (2003). Knowledge systems for sustainable development. *Proc Natl Acad Sci USA* 100, 8086-8091.

⁶ ISPC (2017). Quality of Research for Development Workshop: Insights and Way Forward. Brief No. 52. http://ispc.cgiar.org/sites/default/files/events/ispc_qor4d_workshop_brief52_0.pdf

FRAME OF REFERENCE

The consultative process led to a consensus that QoR4D in the CGIAR context should be viewed as an integrated whole of four key elements: relevance, scientific credibility, legitimacy and effectiveness (adapted from Belcher et al., 2016)⁷ that could be the basis for a common frame of reference across the System.

1. Relevance refers to the importance, significance and usefulness of the research objectives, processes and findings to the problem context and to society, associated with CGIAR's comparative advantage to address the problems. It incorporates strategic stakeholder engagement along the AR4D continuum, original and socially relevant research aligned to national and regional priorities, as well as the CGIAR Strategy and Results Framework (SRF) and SDGs. It also recognizes the importance of International Public Goods (IPGs).

2. Scientific credibility requires that research findings be robust and that sources of knowledge be dependable and sound. This includes a clear demonstration that data used are accurate, that the methods used to procure the data are fit for purpose, and that findings are clearly presented and logically interpreted. It also recognizes the importance of good scientific practice, such as peer review.

3. Legitimacy means that the research process is fair and ethical and perceived as such. This encompasses the ethical and fair representation of all involved and consideration of interests and perspectives of intended users. It suggests transparency/lack of conflict of interest, recognition of responsibilities that go with public funding, genuine recognition of partners' contributions as well as partnerships built on trust.

4. Effectiveness means that research generates knowledge, products and services with high potential to address a problem and contribute to innovations and solutions. It implies that research is designed, implemented and positioned for use within a dynamic theory of change, with appropriate leadership, capacity development and support to the enabling environment to translate knowledge to use and to help generate desired outcomes.

The core principles that sit behind the frame of reference include:

1. Simple and understandable language that is fit-for-purpose;
2. Collaboratively designed and owned;
3. Living document that is iterative, dynamic and forward-looking;
4. Aligned with the CGIAR Strategy and Results Framework; and,
5. Applies to proposed and current research (though outcome/impact assessment and documentation of past research remains important).

Such an integrated QoR4D frame of reference is aimed at bringing coherence across the System and enhancing the overall quality of AR4D within Centers, CRPs and Platforms, steering their strategies, developing research activities, defining and implementing individual projects, and guiding team and individual scientist performance management. The frame of reference helps focus attention on: how research strategies and specific research questions are developed and defined (including who is involved and how relevance is determined); how teams and the overall Center/CRP/Platform are organized to ensure that all necessary functions are performed so that research translates to intended outcomes and impact; whether and how intended outcomes are being realized; and, whether learning systems are in place and working to support ongoing reflection, lesson-learning and improvement. It also encourages an integrated and coherent approach to program and team design. An effective, impact oriented AR4D program requires multiple functions, but no individual or team can, or should, be expected to perform all of them. The frame of reference brings attention at the corporate level to whether and how necessary support and facilitation functions are realized and emphasizes the importance of an appropriately structured and resourced enabling environment.

CASE STUDIES

QoR4D needs and considerations will be different within different CGIAR entities and at different scales. The following case studies from different entities

⁷ Belcher, B.M., Rasmussen, K.E., Kemshaw, M.R. & Zornes, D.A. (2016). Defining and assessing research quality in a transdisciplinary context. *Res. Eval.* 25, 1-17.

across the System provide a brief overview of key considerations and suggested approaches for designing, implementing, assessing and managing QoR4D at each level, from Center/CRP to performance management for individual scientists.

1. An Example of How the Frame of Reference Would Be Used in a Center – ILRI

The following text provides an example of how a Centre (ILRI) would use and implement the frame of reference at both the corporate and individual levels.

CORPORATE LEVEL

Relevance - The relevance of ILRI's research is guided by the SRF, ILRI Corporate Strategy and ILRI Science Strategy, which in turn influence ILRI's program and regional strategies. There is engagement and consultation with key stakeholders at global, regional and country levels through a number of existing fora (e.g. Global Agenda for Sustainable Livestock, Livestock Global Alliance, Forum for Agricultural Research for Africa and the sub-regional organizations, national R&D coordination platform such as the RED&FS in Ethiopia). At the program level, specific consultations are established to help establish research priorities and ILRI's comparative advantage and large individual projects may have steering or advisory committees. ILRI also relies on the CRP theories of change⁸ to assess relevance and prioritization.

Scientific credibility - This can be thought of as quality of inputs and outputs. On the input side all research proposals are reviewed internally and approved by the Program Leader prior to being signed off by the DDG. The Research Methods Group provides input on research design, statistical methodologies, etc. Research outputs are approved by the Program Leader and depending on the type of output may be peer reviewed internally. External peer review through publication in peer reviewed journals is the principal external means of verification of science quality.

Legitimacy - Partnerships are central to ILRI's core business. Engagement with partners is guided by ILRI's

partnership strategy which identifies different types of partners and modes of engagement, ensuring building long term relationships and mutual trust and respect. All research projects are subject to review and approval by the Institutional Research Ethics Committee which is registered with and recognized by the National Commission for Science and Technology in Kenya. Where relevant, projects are reviewed and approved by the Institutional Animal Care and Use Committee and the Institutional Biological Safety Committee. Nearly all publications are now open access and we are working towards ensuring all data is open access.

Effectiveness - A number of measures are taken to ensure that ILRI's research generates knowledge, products and services that stimulate actions, which address problems and contribute to solutions and innovations. ILRI research programs are structured such that the discovery, proof of concept, piloting and scaling phases of research are managed as a continuous pipeline. As with relevance, ILRI relies on the CRP theories of change to help ensure effectiveness. ILRI also places considerable emphasis on communications and capacity development (covering individual, organizational and institutional capacity development) as part of effectiveness.

Management of QoR4D

QoR4D is primarily the strategic responsibility of the DDG-R but much of the operational management is devolved to the program level. Each program has a strategy which covers: overview and rationale; objectives; main areas of research; alignment with CRPs; theory of change (linked to CRPs ToCs); regional engagement; links with other ILRI programs; partnerships; capacity development; communications; gender; and, budget and resource mobilization. In addition, each program has a three-year rolling operational plan giving details of, amongst other things, projected outputs, outcomes, communications and capacity development.

INDIVIDUAL SCIENTIST LEVEL

At the individual level, each scientist is evaluated annually against seven criteria. For each criterion, there is a range of acceptable levels of performance. Every scientist is not expected to be performing at the same level across all criteria, although there are minimum

⁸ ILRI both contributes to the development, and benefits from the implementation, of the theories of change of the CRPs in which it participates

levels of performance for some criteria. For example, one scientist might be publishing at a higher rate while another might be contributing more to development outcomes. These seven criteria and how they map to the elements of quality of research for development are shown in Table 1.

2. An Example of How the Frame of Reference Would Be Used in a CRP – FTA

The following text provides an example of how a CRP (FTA) would use and implement the frame of reference at different scales, from CRP to performance management for individual scientists.

CRP-LEVEL STRATEGY, PROGRAM DESIGN AND IMPLEMENTATION

Relevance is realized in the overall FTA strategy and theory of change, which take account of CGIAR SRF/ SLOs, international processes and debates within the FTA mandate, research and policy processes in key countries, as well as advances in science. Achieving this requires ongoing engagement with stakeholders, partners and processes, as well as well-focused *ex-ante* impact assessment and priority setting, with periodic review and update of the FTA strategy.

Scientific credibility means maintaining a reputation as a leading, science-based research organization in its

Table 1. Criteria Used for Assessment of Scientists’ Performance

CRITERION	ELEMENT
Research activities <input type="checkbox"/> Scale of activities involved in <input type="checkbox"/> Resource mobilization	Relevance/Scientific credibility
Research outputs <input type="checkbox"/> Publications ⁹ <input type="checkbox"/> Other outputs	Scientific credibility/Relevance
Institute development <input type="checkbox"/> Involvement in institute committees, task forces, panels, etc.	Legitimacy
Influencing policy and practice	Relevance/Effectiveness
Capacity development <input type="checkbox"/> Supervision of graduate fellows <input type="checkbox"/> Training	Effectiveness
Partnerships <input type="checkbox"/> Developing, leading or managing partnerships	Legitimacy/Effectiveness
Resource management <input type="checkbox"/> Staff and other resource management <input type="checkbox"/> Adherence to institute policies and procedures	Legitimacy

⁹ Each scientist is expected to produce an average of 2-4 refereed papers per year, depending on grade and role.

mandate area, and as an “honest broker”. The main tests and demonstrations of scientific credibility are data-management systems that meet or exceed international standards and scientific peer review of FTA research through ongoing regular publication of FTA research in international peer-reviewed journals.

Legitimacy means ensuring that systems are in place to encourage and facilitate efforts to engage and appreciate stakeholder perspectives. These include: appropriate ethical review protocols; review of gender-sensitive research practices using the “Gender Equity in Research Scale (GEIRS)”, and; performance management systems that recognize and reward engagement and relationship building (discussed below).

Effectiveness at the CRP level requires that overall systems and management are oriented to ensure that all necessary functions are performed at all stages in the research cycle to contribute to significant outcomes and impacts. *Inter alia*, this means having good strategic intelligence, appropriate and high-quality partnerships, strong capacity development, effective communications (from upstream to downstream) and strong MEIA systems. Effectiveness will be assessed through ongoing monitoring, including of sub-IDO indicators, through systematic outcome evaluation and impact assessment and ongoing testing and updating of FTA- and FP-level ToCs, as set out in the FTA MEIA Strategy.

FP-LEVEL STRATEGY, RESEARCH FOCUS, DESIGN AND IMPLEMENTATION

Considerations and tests of relevance, scientific credibility, legitimacy and effectiveness at the FP level will be similar to those that the CRP level, but with more detail about partners, stakeholders, users and more specific and more easily testable ToCs. These are not elaborated here to save space.

ACTIVITY (GRANT) LEVEL RESEARCH DEFINITION, DESIGN AND IMPLEMENTATION

Individual activities and CoAs will be reviewed and assessed to achieve high quality AR4D. FTA is developing a priority-setting process for W1+2 funded activities that will use the following (still draft) criteria:

Relevance - The proposal clearly demonstrates the relevance of the work to intended users and to the FTA ToC.

Scientific credibility - The proposal clearly explains the scientific rationale, research question(s) and methods, giving confidence that research findings will be novel, robust and scientifically trustworthy.

Legitimacy - The proposal clearly explains how the work will take account of and reflect stakeholders’ perspectives and values.

Effectiveness - The proposal demonstrates that the work is deliberately and convincingly positioned to contribute to significant outcomes, with high potential to contribute to FTA IDOs and CGIAR SLOs.

Contribution to IPGs: The proposed work has high potential to develop methods and/or new knowledge that will have international public goods value.

Strategic value: The proposed work has high potential to add value at the FTA Program-level and will use W1+2 funds to strategically build-on and leverage bilateral funding to help realize the FTA ToC.

Program Building: The proposed work has high potential to contribute to the growth of FTA through developing and strengthening partnerships, generating additional development opportunities and attracting and leveraging new resources.

Research quality will be tested ex post through FTA’s theory-based outcome evaluations and, where appropriate, experimental and quasi-experimental impact assessments.

INDIVIDUAL AND/OR TEAM PERFORMANCE MANAGEMENT

FTA recognizes that achieving high quality AR4D requires having well-focused performance management for individuals and teams. Team composition and related cross-cutting services and support need to help ensure that all necessary functions to support and encourage knowledge translation are in place.

Individual performance contracts and appraisals need to balance expectations, with adequate rewards and support for scientists and other staff to do research that is relevant, scientifically credible, legitimate and effective. FTA is working with partner centers to develop shared performance assessment of team leaders and opportunities to provide input and feedback on individual performance appraisal.

3. Implementation by the ISPC

The key purpose of the ISPC is to act as an independent advisor to the System Council on science and research matters, including strategies for effective partnerships along the research for development continuum, thereby enhancing the CGIAR's contribution to the SLOs and thence to the achievement of the SDGs. It does this by drawing upon expertise across and beyond the CGIAR System, and conducting its own analysis of the information acquired to maintain the independence of its advice. Here we describe how thinking about the four elements of the frame of reference will help to improve the QoR4D being undertaken by the CGIAR. We also suggest 'standards' which could be used by the Centers and CRPs as a guide to identifying indicators specific to the different scales of implementation.

Relevance - Clarity of goals and objectives are key to enhancing relevance. The overarching document guiding the System is the SRF and the ISPC undertakes various activities to strengthen alignment between the research questions which the CGIAR is addressing and the global goals articulated in the SRF. Work on Foresight analyses trends in key drivers of food security, poverty and environmental issues in developing countries, and our Science Fora challenge conceptions of how research can contribute to global challenges, both of which should influence the design of research questions. Our *ex-ante* assessment of CRP proposals explores the degree of alignment of the proposed research strategies with the SRF.

Scientific credibility - Robustness and rigor of methodology, and capability of researchers and research teams are key to enhancing scientific credibility. The ISPC's role here is primarily in providing independent feedback to donors on these criteria in assessments of CGIAR research proposals. The gold standard interna-

tionally is external peer review but training, mentoring and management of researchers are also important.

Legitimacy - Research ethics are increasingly recognized as an important element of quality, beyond their origins in the social sciences. The ISPC reviews proposals for the way they address gender equity and youth participation. The minimum standard is having a research ethics committee in place, but training of researchers is also essential for enhancing quality. Additionally, legitimacy deals with recognizing the responsibilities that go with public funding; for Centers/CRPs, the minimum standards include showing how prioritization is carried out to maximize the use (for the public good) of limited funds as well as mechanisms to avoid misuse or abuse of funds. The ISPC work on prioritization aims to provide advice to the System Council on potential consequences of options for allocating funding at the System level.

Effectiveness - It is not the remit of research to directly deliver development outcomes and hence meaningful and strategic partner engagement is key. The ISPC has a workstream specifically on partnerships and also assesses partnership strategies during its independent program review. Standards include feedback from development partners on the degree of interest in and usefulness of the research outputs. The ISPC's workstream on impact assessment generates evidence about the nature and extent of realized impacts across the broad range of CGIAR research investments, in addition to being an input to *ex-ante* strategic planning. The ISPC will also consider the effectiveness of the enabling environment within which the research takes place.

There is a need at System level to monitor and ensure that high standards are maintained, although the specificity of the indicators associated with the standards for each element depends on the scale at which the frame of reference is being implemented. The ISPC does not at present have a specific role in monitoring.

4. Use of the Frame of Reference in Independent Evaluation - IEA

IEA's evaluations of CGIAR research have covered six evaluation criteria: relevance, quality of science, effec-

tiveness, impact, sustainability and efficiency (of governance and management). The first three criteria, in particular, focus on current program and its research performance. Drawing from experience during evaluations of the phase-I CRPs, IEA is adjusting its approach and guidelines for operationalizing the evaluation of individual criteria and linking them better to each other. The IEA framework for evaluating research performance is largely in line with the four elements of the QoR4D frame of reference: relevance, scientific credibility, legitimacy and effectiveness.

For assessment of **relevance**, evaluation considers the extent to which the objectives and design of research are consistent with external priorities and policies (e.g. beneficiary countries and partners), as well as CGIAR SLOs, including the research program's internal relevance (logic of impact pathways) towards the IDOs the research contributes to. Assessment of relevance also covers comparative advantage of the program as an evolving condition, prioritization and use of core funding. In assessing relevance, evaluation complements ISPC's assessment of program proposals as appropriate.

Evaluation of **scientific credibility** covers outputs where the main areas are published results and germplasm, but also leadership, research staff, processes and incentives for achieving and maintaining high scientific credibility of those outputs. Assessment of scientific credibility will also include, among other things, track record of research teams, use of state-of-the-art research literature and methods, and novelty.

While IEA has not included **legitimacy** as an explicit criterion, the interests and perspectives of intended users have been to some extent covered under other criteria, in particular relevance and effectiveness. Assessment of fairness and ethical aspects of research implementation will be made a standard aspect in evaluation according to this frame of reference.

Evaluations cover **effectiveness** both in a forward looking manner on basis of the program theories of change – their plausibility, assumptions, and constraint analysis – and through assessing progress milestones, near-term achievements and potential for scaling. Evaluation of effectiveness incorporates aspects of enabling environment: gender, partnerships, capacity development and communications. Evaluations also use uptake/outcome

studies when they are available, usually considered under impact.

The criteria are linked in many ways, and for example partnerships and synergy among Centers and CRPs will be assessed across the elements.

5. Use of the Frame of Reference in Oversight of the CGIAR Portfolio and Advice to Funders – CGIAR System Management Organization¹⁰

In the Charter of the CGIAR System Organization, the System Management Board (SMB) is charged with several aspects of the confirmation of business plans and annual scientific and outcome reporting of the System at the aggregate portfolio level (CRPs and Platforms). The SMB makes recommendations on such plans to the System Council, including indications for strategic allocation of unrestricted (core or W1-W2) funds for support of the portfolio. The strategy for fund allocation and use are expected to comply with the performance management system and the risk management framework of the System. The SMB is supported by its implementing arm, the System Management Office. The SMB is expected to work towards the enhanced complementarity and effectiveness of the processes outlined by the several entities described above.

Relevance - The SMB is charged with making “recommendations to the System Council on strategic action to ensure results and continued relevancy of agricultural research for development”. It uses as its guide the SRF and the portfolio of CRPs and Platforms agreed in 2016. To keep the continued relevancy of the portfolio under review it expects, over time, to use and balance the outcomes of foresight studies (from the ISPC, Programs and other sources – including funder perceptions of emerging international issues). The SMB will consider and make recommendations on scientific and resource flexibility to address new challenges relevant to CGIAR.

Scientific credibility - The SMB largely depends upon Center and CRP processes, and periodic evaluations, for ensuring the scientific credibility of individual program and platform research. It encourages and assesses in a general way the implementation of Center

policies, reviews and CRP impact studies through annual reporting. Maintaining scientific credibility is considered a key risk factor for CGIAR at large and will be addressed at the level of the Risk Management Framework of the CGIAR system.

Legitimacy - The System Organization (and its predecessor the Consortium) have played key roles in enhancing System awareness on such topics as gender inclusion in research and staffing, open access to CGIAR data, intellectual asset policy, establishment of transparent monitoring and evaluation frameworks, including support for communities of practice in these fields. The consideration of the role of partners also enters into SMB review of program and platform annual reports, an evolving view of CGIAR comparative advantage and recommendations to the System Council on the organization of CGIAR research.

Effectiveness - The SMB has the responsibility to bring to the attention of the System Council means to enhance the effectiveness and efficiency (including cost-efficiency) of the CGIAR as opportunities arise (e.g. through evaluations, impact assessments), and its annual synthetic reviews of program and budget performance.

IMPLICATIONS AND WAY FORWARD

The frame of reference is expected to be used as a tool to: a) better implement agreed strategies within the System to foster a culture that enables higher quality of research to be conducted; and, b) give confidence to donors that there is a commitment to strengthening QoR4D in all aspects of CGIAR research. Successful implementation will require strong commitment to its adoption at all levels of management and governance and sharing of lessons learnt (e.g. how to handle the trade-offs between the four elements, how to minimize cost of implementation and recognizing unintended consequences in specific circumstances) during its implementation. The QoR4D frame of reference was presented at the ISPC meeting in Rabat, Morocco (18-19 September 2017). Participants noted that while quality control checks are very important, some thought needs to be given to mechanisms to stimulate excellent research and to reward researchers. In the same vein, low quality activities/poor science should be stopped. There was agreement that the frame of reference should therefore be seen as a learning mechanism to improve the quality of research through its application at different levels. Thus there is no 'one size fits all' metric and appropriate indicators would depend on the context of its implementation, and should also seek to minimize transaction costs.

¹⁰ Composed of the System Management Board and the System Management Office

