

# How to evaluate science, technology and innovation in an R4D context

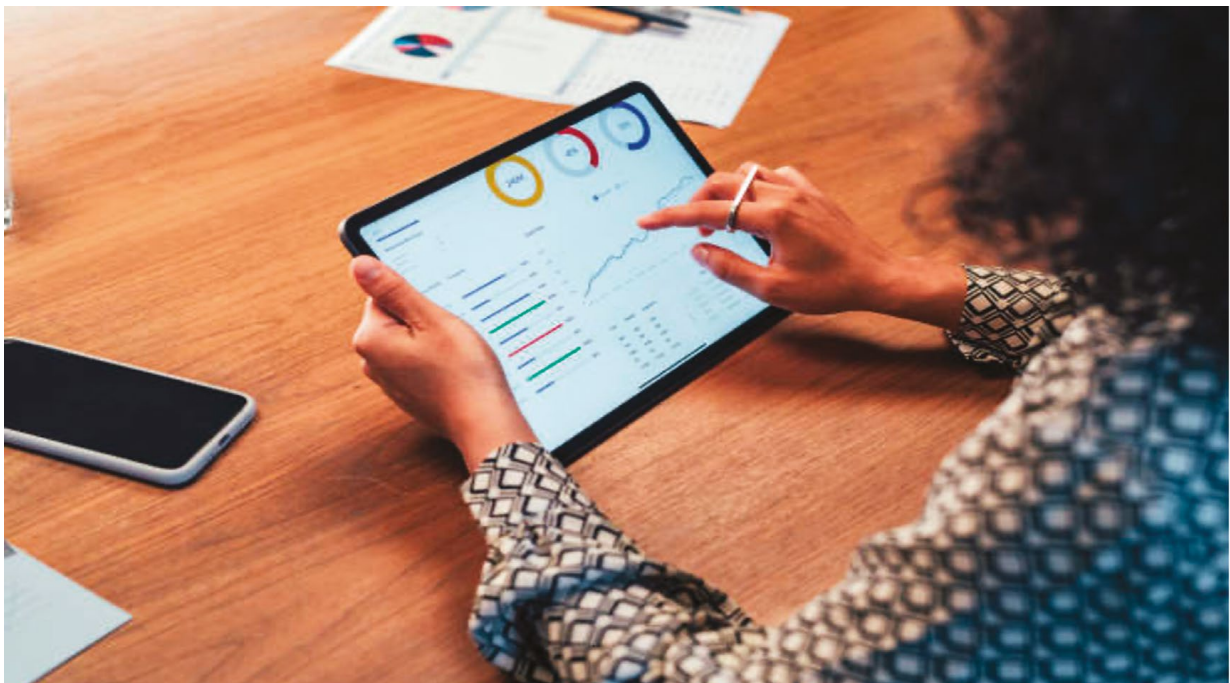
## Summary of two EvalForward discussions

MARCH-APRIL 2022 and MAY-JUNE 2023

Svetlana Negroustoueva, Evaluation Function Lead at CGIAR, raised two discussions on EvalForward aimed at: (1) sharing experience on practices in evaluating science, technology and innovation in a research for development (R4D) context (co-hosted with the Food and Agriculture Organization of the United Nations [FAO] Office of Evaluation) and (2) reflecting on the beta version of the **CGIAR Evaluation Guidelines**.

This document summarizes the key points that emerged from both discussions. The full exchanges are available at <https://www.evalforward.org/discussions/quality-of-science> and <https://www.evalforward.org/index.php/discussions/new-guidelines>.

Discussion 1 was an important prelude to discussion 2, as it highlighted the value of consolidating and adopting a standardized approach to measuring quality of science (QoS) within an organization such as CGIAR, to help measure outcomes and effectiveness, improve data quality, identify gaps and aggregate data across CGIAR centres. The value of this discussion for learning was undeniable and helped greatly in developing the guidelines to operationalize the QoS evaluation criterion in the revised **CGIAR Evaluation Policy**.



Responses to the discussions are summarized under seven topics

- 1. Frames of reference for evaluating QoS and research**
- 2. Methods and indicators for evaluating science and research, including monitoring, evaluation and learning (MEL) practices**
- 3. Utility of the CGIAR Evaluation Guidelines in evaluating QoS and research in process and performance evaluations**
- 4. Clarity and usefulness of the guidelines' dimensions (research design, inputs, processes and outputs) for evaluating QoS and mapping to other evaluation criteria**
- 5. Value of QoS as a designated evaluation criterion**
- 6. Utility of the guidelines for evaluating development projects and impact**
- 7. Facilitating learning from the implementation and uptake of the guidelines within the evaluation community**

## **1. Frames of reference for evaluating QoS and research**

- Several frames of reference were highlighted: the **Quality of Research for Development (QoR4D) frame of reference**, the **Research Excellence Framework (REF)** and the **RQ+ Assessment Framework**.
- The discussion focused on the **QoR4D frame of reference** elements and links to evaluation criteria: relevance, legitimacy, effectiveness and scientific credibility.
- Several participants highlighted the importance of relevance in situations where outputs are used or are supposed to be used to trigger transformational change, particularly considering what is important for the final beneficiaries of the scientific results.
- Participants noted the importance of assessing the quality of “doing science” (as a systematic process leading to a research output), as well as the potential or actual outcomes and impact at systems level (transformational change) resulting from the social appropriation of the research output.

## **2. Methods and indicators for evaluating science and research, including MEL practices**

Participants agreed on the importance of using a mixed-methods approach to combine qualitative and quantitative indicators, discussing their strengths and limitations.

- Quantitative methods with an emphasis on bibliometric analysis (BA):
  - BA provides a good indication of QoS, as published papers have been peer-reviewed prior to publication (high quality threshold). It aids in assessing the legitimacy of research findings and the credibility of knowledge products, and provides an overview of the efforts made and the scientific outreach achieved.

- The **Technical Note** highlights the broader range of dimensions of bibliometrics indicators – namely, cross-disciplinarity, gender equity and complex multinational collaborations – useful for assessing relevance and legitimacy.
- Some limitations of BA include: selective coverage of research products; selective citations; and limited attention to policy outreach, contextual relevance, sustainability, innovation and scaling.
- The value of using Altmetrics in association with BA was also noted, as well as the fact that it is difficult to combine the two to get a full picture of scientific impact.
- Participants raised the use of social network analysis of publications to explore collaboration and social and organizational context as a complement to BA, particularly for the legitimacy dimension.
- Qualitative methods combined with BA and Altmetrics:
  - Using qualitative methods, along with BA and Altmetrics, was considered essential to gaining a broader picture when assessing QoS.
  - Qualitative assessments are often done by way of participatory interviews and/or surveys, which require the evaluator to make subjective judgements (making sense of the narrative is not easy).
  - The variety of evidence (context specific, different focus, evaluation criteria, approaches, methods and tools, and so on) makes the synthesis of qualitative evidence challenging.
- MEL practices:
  - CGIAR has used a combination of quantitative and qualitative methods within MEL for evaluating QoS: BA (for example, Web of Science Core Collections, percentage of articles in Open Access, ranking of journals in quartiles) as well as Altmetrics for published journal articles and outcome impact case reports (OICRs) to describe the contribution to outcomes and impact.
  - Tools and methods to address MEL challenges, such as IT tools, include *ATLAS.ti*, *MAXQDA*, *NVivo* for powerful narrative analysis; *Cynefin Sensemaker* and *Sprockler* for design and collection functionalities; and *NarraFirma* to help with the design of the narrative inquiry and support participatory analysis.
  - The MEL component of evaluating QoS should be strengthened to address the need for science and its effect on society.

### 3. Utility of the CGIAR Evaluation Guidelines in evaluating QoS and research in process and performance evaluations

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The majority of participants agreed that the new guidelines offer solutions for evaluating QoS in an R4D context:

- They are well researched, useful, clear, flexible and adaptable.
- They encapsulate lessons from a decade of CGIAR evaluations in addressing challenges of evaluating QoS in process and performance evaluations.
- They are flexible, providing a middle ground to serve CGIAR and other organizations.
- They are a useful toolbox in the agricultural research for development (AR4D) context, for situating QoS while assessing key questions following five Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) evaluation criteria.
- They form a compendium of methods and questions that would also be useful in other evaluation contexts, with proper conceptual framing.

#### 4. Clarity and usefulness of the guidelines' dimensions for evaluating QoS and mapping to other evaluation criteria

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Most participants agreed that the four dimensions (design, input, process and output) of the QoS evaluation criteria provided greater clarity and structure to evaluations:

- The four dimensions are clear, with designated criteria and well-defined indicators.
- The four dimensions are amenable to a mixed-methods evaluation approach using both quantitative and qualitative indicators.
- The strengthening of qualitative indicators with robust rubrics reduces subjectivity.
- The four dimensions provide flexibility that enables the guidelines to be used at different stages of the research cycle, from proposal to project completion and beyond (better capturing the R4D nexus).
- The process dimension emphasizes the importance of building and leveraging partnerships.
- The mapping of the four dimensions to the OECD/DAC criteria enhances the usefulness of the guidelines to experiences in using the OECD/DAC criteria for evaluations.

#### 5. Value of QoS as a designated evaluation criterion

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Participants raised a range of issues on the value of a designated QoS evaluation criterion, which reflected their backgrounds in research and development contexts:

- Participants highlighted the value of using the guidelines to design a bespoke evaluation system for QoS for a new university department.
- The three key evaluation questions recommended to evaluate QoS are appropriate for R4D projects in general.
- In the context of the **CGIAR's GENDER Platform evaluation**, participants noted the usefulness of the guidelines as an AR4D toolbox in situating QoS while answering key evaluation questions aligned to standard five DAC evaluation criteria. Additionally, the guidelines's breadth was noted: they straddled both the perspectives of the evaluator lens (led by an evaluator) and researcher lens (led by subject-matter experts) to unpack the key evaluation questions mapped along the four QoS dimensions.

#### 6. Utility of the guidelines for evaluating development projects and impact

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Several contributors requested clarity on whether the guidelines were useful for evaluating development projects and impact:

- They were developed in the context of the co-designed R4D with development partners, to facilitate innovation uptake and scaling for development impact.
- They are flexible enough to be adapted for evaluating development projects with science or research elements.
- They were retroactively applied to two development case studies: (**ACA CLIM**, implemented by FAO, and **Feed-the-Future AVCD-Kenya**) in **the CGIAR workshop**, which showcased wider applicability to development projects.
- While impact evaluation is outside the scope of the CGIAR's Independent Evaluation Function, indicators such as "scaling readiness" and "positioning for use" assess progress along the impact pathway toward the SDGs and beyond.

- The QoS dimensions in the guidelines allow to deploy 3-5 years since the start, and after the termination to assess the progress with the uptake of technologies. Furthermore, evaluations of QoS can serve as a solid basis for impact evaluations, to better understand from the outset the contribution of research outputs to outcomes and impact.
- Echoing the **2022 discussion**, stakeholder analysis was highlighted to allow an inclusive or beneficiary focus to evaluations, namely, an emphasis on communities as important stakeholders of research and innovation. Such analysis within the *process* and *output* dimensions would identify participation in and benefits from successful research and development activities.

## 7. Facilitating learning from the implementation and uptake of the guidelines within the evaluation community

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Several participants raised issues worthy of clarity or better emphasis in the use of the guidelines, including:

- whether the single criterion of QoS sufficiently captures the essence of research and development;
- greater clarity is needed on the differences between process and performance evaluations;
- there is a need to include assumptions, specifically those that relate to the uptake of outputs by the client;
- the importance of internal and external coherence;
- the need to define appropriate inclusion and exclusion criteria when designing research evaluations; and
- the importance of defining the research context, prioritized in the revised **Research Quality Plus (RQ+) approach** by the International Development Research Centre (IDRC).

Most participants made useful suggestions about the need for CGIAR to build capacity for the roll-out and uptake of the new guidelines, including:

- training sessions and workshops, online resources (webinars, collaborative platforms), mentoring partners;
- piloting the guidelines in case studies and up and coming evaluations;
- building the capacity of relevant stakeholders to understand and use the guidelines, to support their wider use and to further engage with the evaluation community;
- with reference to the suggestion for a meta-evaluation of the usefulness of the guidelines for evaluating current CGIAR projects, this is currently being done retrospectively on the previous portfolio of 12 major programmes (implemented in 2012–2021), with notable improvements in clarity and the definition of outcomes;
- insights to strengthen and refine the guidelines based on further process and performance evaluations in different contexts and portfolios.

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