

January 2022



## Introduction and Background

In 2017, CGIAR launched a five-year [Platform for Big Data in Agriculture](#) (the Platform) to enhance the development, curation, and maintenance of its data and knowledge assets, and to stay at the cutting-edge of the rapidly evolving digital world. The Platform worked to increase the impact of agricultural development by embracing big data and information and communications technology (ICT) approaches to solve development problems faster, better and at greater scale.

The evaluation function under the CGIAR Advisory Services Shared Secretariat (CAS Secretariat) conducted, in 2021, an external evaluation of the Platform, to serve the dual purposes of accountability and learning. The independent evaluation assessed the design, implementation, and achievement of Platform's objectives, along the CGIAR Evaluation Policy and OECD/DAC evaluation criteria, and made actionable operational and strategic recommendations.

## Recommendations

Considering the [CGIAR 2030 Research and Innovation Strategy](#) and its seventh way of working, "making the digital revolution central to our way of working", the evaluation made the following recommendations to the CGIAR System:

1. **Develop** a One CGIAR (research) digital capability model and ensure the funding for a long-term digital plan with successive phases and a clear mandate based on the 2021 [Strategic Research on Digital Transformation assessment](#).
2. **Lead** the way in hosting open data and providing analytic tools for CGIAR and its partners and increase the data and funding.
3. **Develop data synthesis tools** that are amenable for use by decision-makers to support data co-curation.
4. **Develop** a data **curation and transformation dashboard** to enable CGIAR and partners to access tools and technical support to undertake data harvesting, data harmonization, and visualization.

For One CGIAR Initiatives beginning in 2022, the evaluation recommended:

5. **Prioritize** specific digital solutions for specific data (domains) aligned with agricultural research needs to demonstrate the value of the answer (big) data can provide to support CGIAR's key priorities.
6. **Prioritize and advance** the interoperability agenda, building on CGIAR's wide variety of datasets.
7. **Strengthen** the conceptualization (theory of change) of how the impact of agricultural research for development (AR4D) can be increased by embracing big data and ICT approaches to solve development problems faster, better, and at a greater scale.
8. **Raise** CGIAR Centers' (Entities') engagement to ensure technology solutions uptake.
9. **Build** a new harmonized and interoperable analytical environment in CGIAR based on accumulated knowledge from the experience of the Platform's implementation.
10. **Improve** grant scheme management, monitoring, and governance to foster the Platform's (or successors') relevance to contribute to solving AR4D challenges.

## Lessons Learned

- Data curation needs to be standardized, fit a well-defined set of requirements, and be made available to end-users with proper incentives and training in quality assurance and documentation. Without interoperability, big data, and big answers will never be achieved.
- End-users will not easily reproduce the prototypes (open science contribution) without cross-module activities that lead to demonstrable proofs of concept and useful prototype capabilities.
- "If you build it, they will come" principle does not apply to initiatives and digital artifacts for big data in AR4D. Additional efforts are required to increase awareness and uptake and, early-adopter feedback is critical to iteratively refine products.
- Building trust with and engaging all CGIAR Entities in decision-making are important to ensure wide acceptance and adoption of any new, centralized technology and solutions.
- Piecemeal approach to gender integration is less cost-effective in the long run.

*The evaluation recommendations and lessons learned stem from key findings presented on the next page, organized by four evaluation criteria.*

## Findings and Conclusions by Evaluation Criteria

### Relevance

- The Platform developed a range of relevant outputs such as [GARDIAN](#), seven Communities of Practice (CoPs), [Inspire Challenge process](#), etc. aligned with One CGIAR. However, it did not sufficiently streamline varying data management approaches or leverage the capabilities of CGIAR Centers (Entities).
- Consideration of gender issues was not strongly embedded in the Platform's design. Consequently, adequate resources (budget and in-house expertise) were not systematically provided to integrate gender as a transversal theme.
- The Platform adapted to evolving environments and constraints (GARDIAN syntactic interoperability, deployment of COVID-19 Rapid Response grants).

### Efficiency

- The Platform sought to leverage CGIAR's convening power. The management team was the chief decision-making body complemented by mechanisms for technical collaboration such as open technical CoPs and an innovation process to move the agenda of (big) data management and analytics in agriculture research forward. Yet this was not enough to foster CGIAR Center's (Entities') engagement with the Platform's outputs.

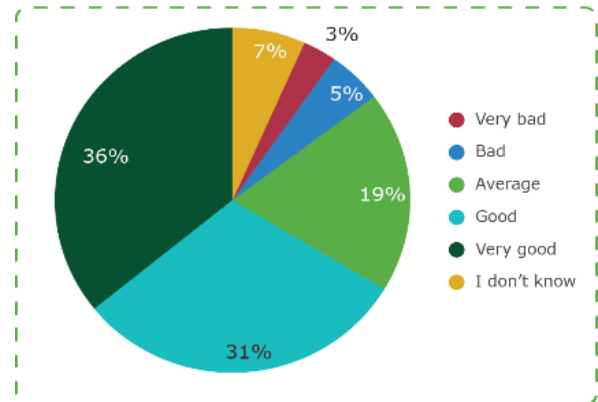
### Effectiveness

- The Platform contributed to increased engagement between CGIAR researchers and stakeholders from the digital ecosystem. It resulted in standardization efforts: development and use of terms for data comparisons and reuse (e.g., Ontologies CoP, and Information and Data Managers CoP), digital extension (e.g., Data-Driven Agronomy CoP), and modeling (Crop Modeling CoP).
- More work is required to advance the data interoperability principle to safeguard the quality of CGIAR proposals/recommendations and strengthen its claim to the attribution of its value in AR4D from its existing data.

### Sustainability

- CGIAR is well-positioned but not sufficiently prepared to have a leadership voice in international digital agriculture according to views of its internal stakeholders.
- The Platform was instrumental in updating [CGIAR Open and FAIR Data Assets policy \(2021\)](#), to replace the 2013 [Policy](#). Challenges await in the transition to One CGIAR.
- The work of the Big Data Platform added value to CGIAR's efforts to map data, methods, and tools to support the delivery of research. Much effort is still needed to move forward the agenda of data interoperability and reusability.

Figure 1: CGIAR's preparedness to lead in the international digital agriculture landscape ([Online survey](#); n=59)



## Evaluation Methodology

The evaluation was conducted by an external evaluation team. It comprised a lead evaluator and subject matter experts in ICT, geospatial data analytics, bioinformatics, and disaster resilience.

The team followed a mixed-method approach which included: an [online survey](#); usage analytics (GARDIAN2); document review; and key informant interviews. Taking a two-stage analysis approach, the evaluation team first conducted component studies for the three Platform modules: [INSPIRE](#), [CONVENE](#), and [ORGANIZE](#) (see [Annex 7](#)). The studies were peer-reviewed and validated for further input into the final evaluation report.



### For more information

- Visit the [evaluation webpage](#)
- Access the [Report](#), [Annexes](#) & [Online Survey](#)
- Read the blogs:
  - [Digitalizing agriculture: can Big Data accelerate and enhance the impact of international agricultural research?](#)
  - [Evaluation Case Study: CGIAR Big Data Platform's Ontologies CoP](#)
- Contact us at: [CAS-Evaluation@cgiar.org](mailto:CAS-Evaluation@cgiar.org)