# mdii

multidimensional digital inclusiveness index

IWMI International Water Management Institute

CGIAR DIGITAL TRANSFORMATION

CGIAR SUSTAINABLE FARMING

mdii.iwmi.org



**A scientific tool to enhance inclusiveness and adoption of digital solutions for agrisystems**

Across the global South, digital solutions have arisen to empower farmers and consumers in agrisystems. Yet if some groups, for example women, the elderly or people with little formal education, are less able to access or use innovations, those innovations widen existing inequalities.

The Multidimensional Digital Inclusiveness Index (MDII) lets researchers and innovators see how to improve the inclusiveness of a digital solution. An assessment by external evaluators and users quantifies how well the solution does across a comprehensive set of inclusiveness indicators, and turns the result into prioritised, actionable recommendations.

MDII is tailored for agrisystems: it highlights the gender, socioeconomic, technological and location-specific barriers to adoption by farmers in global South contexts. Its goal is digital solutions that are accessible, equitable and inclusive for underrepresented communities.

### MDII is for:

- Researchers, innovators and developers creating digital solutions for global South agrisystems
- Programmes and funders who need evidence on which tools reach women, youth and other underrepresented groups

### MDII helps answer:

- Is this tool inclusive for users with low access?
- Where are the gaps in usability, trust and local alignment?
- How can we improve adoption through design?

### Use MDII to:

- Try a free self-diagnosis in about ten minutes
- Generate automated, evidence-based recommendations
- Run evaluations with an offline-friendly toolkit
- Compare tools across countries and partners on one dashboard

### Applicable tools:

- Farm advisories, decision support platforms, digital-enabled sensors, marketplaces
- Deployed (Regular version) or in development (Ex-Ante version)

# Methodology

MDII is a structured evaluation framework that recognises the importance of inclusiveness at all stages of innovation development.

The framework consists of 90 indicators, which inform 23 subdimensions of seven dimensions, covering three mega-groups: **Innovation usage**, **Social consequences**, and **Stakeholder relationships**.

The solution is given a score using a five-tier system for inclusiveness across each dimension and subdimension. This makes it simple to identify points of strength and areas for improvement.

Based on this data, domain expertise and input from stakeholders, the evaluation team provides **recommendations** and **actionable insights** for improvement.

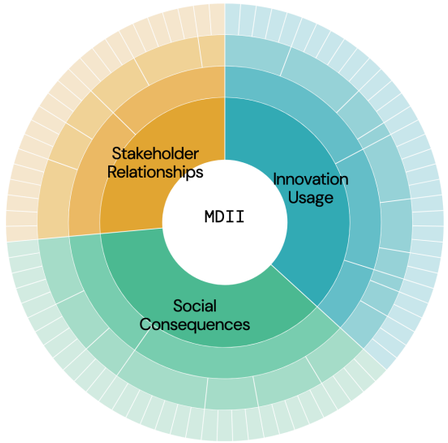
# Background

Research into digital inclusion highlights the importance of individual experiences in technology adoption processes. Understanding if (and how) digital agritools are inclusive requires examining not only structural aspects, such as access to technology, but also the experiential dimensions.

The term *digital inclusiveness* encompasses both dimensions: a structural aspect ("inclusion"), concerned with access and opportunity, and an experiential aspect ("inclusivity"), focused on users' sense of belonging and engagement.

Metrics and methods are essential for assessing inclusiveness and transformative impact, especially in identifying populations historically excluded from digital innovations. However, existing indices are limited in scope and not adapted to agrifood system applications.

MDII addresses this gap by integrating concepts from both Information Systems (IS) theory and gender equality and social inclusion (GESI) research to assess not only whether digital technologies are available and accessible, but how they are experienced, adopted and governed by diverse agricultural actors.




**3** mega-groups **7** dimensions **23** subdimensions **90** indicators

| | |
|---|---|
| Exceeding expectations | 90-100% |
| Meeting expectations | 70-89% |
| Approaching expectations | 50-69% |
| Below expectations | 25-49% |
| Significantly below expectations | 0-24% |

### *Resources*

**A multi-dimensional framework for responsible and socially inclusive digital innovation in food, water, and land systems**
Opola, F., Langan, S., Arulingam, I., Schumann, C., Singaraju, N., Joshi, D., Ghosh, S. (2025).
https://hdl.handle.net/10568/174461

**Development of the conceptual framework (version 2.0) of the Multidimensional Digital Inclusiveness Index**
Martins, C. I., Opola, F., Jacobs-Mata, I., Garcia Andarcia, M., Nortje, K., Joshi, D., Singaraju, N., Muller, A., Christen, R., Malhotra, A. (2023).
https://hdl.handle.net/10568/138705

More publications, reports and tools: **mdii.iwmi.org/outputs**

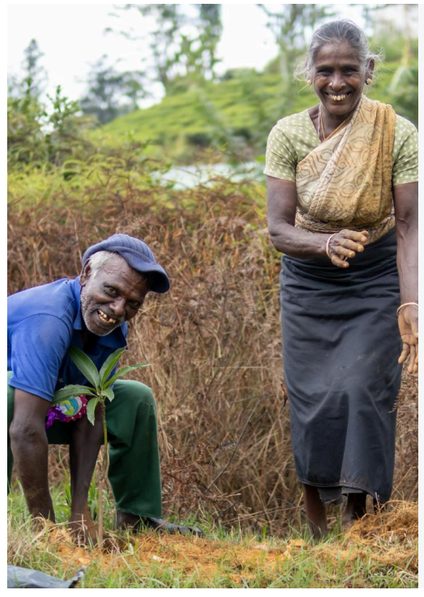


## Innovation usage

**Accessibility**
Measures availability and accessibility of digital resources for underrepresented groups.
*Subdimensions: Infrastructure Accessibility, Economic Accessibility, Digital Accessibility, Information Accessibility.*

**Usage Effectiveness**
Assesses the ease and effectiveness of digital tool and service usage among underrepresented users.
*Subdimensions: Digital Skill Enhancement, Desirability, Usability.*

**Supportive Ecosystem**
Supports the seamless adoption and sustained use of digital solutions.
*Subdimensions: Knowledge-based Resources, Enabling Policies, Community Support.*



## Social consequences

**Beneficial Impact**
Evaluates the positive impacts of digital innovations on underrepresented users.
*Subdimensions: Solution Effectiveness, Problem Relevance, Sustainability, Social Value Creation.*

**Risks and Harms**
Evaluation of the potential negative impacts that digital innovation products might have on users.
*Subdimensions: Long-term Loss, Reinforcement of Inequalities, Data Misappropriation.*



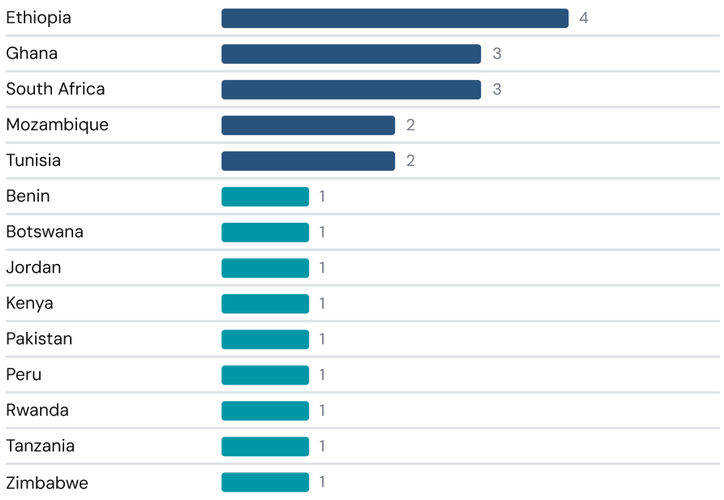
## Stakeholder relationships

**Ethical and Responsible Innovation**
Ensures ethical practices and responsible innovation in digital initiatives.
*Subdimensions: Data Governance, Ethical Compliance, Reflexive Innovation.*

**Co-creation and Governance**
Encourages collaborative innovation and inclusive governance in digital initiatives.
*Subdimensions: Collaborative Innovation, Grassroot Innovation Collaboration, Inclusive Governance.*

## Scope of implementation

MDII applies to digital solutions in agrisystems anywhere. By September 2026 it had been used to evaluate **17 tools in 14 countries** in Africa, Asia, the Middle East and South America.






Tools evaluated per country, September 2026. Peru lies outside this view of the globe.

## The MDII process

Visit **mdii.iwmi.org** — Click **Start an evaluation**

**`Self-diagnosis (free)`**

Rate your own tool against the framework in about ten minutes. No account, nothing stored.

Get a provisional score and tier, a profile by dimension and priority recommendations.

**`Rapid assessment (free)`**

An AI assistant collects what it needs from you in one chat session. No fieldwork.

Receive a preliminary inclusiveness reading by email, and decide whether a full evaluation is the next step.

**`Full assessment (priced service)`**



**Request.** Fill the request form. A coordinator scopes the tool, its users and countries; you receive a quote and a plan.



**Collect.** Evaluators gather evidence from users, downstream beneficiaries and domain experts, online or with the offline toolkit.



**Receive.** Scores, a full report, prioritised recommendations, a findings session with your team and a private dashboard.

## Key findings

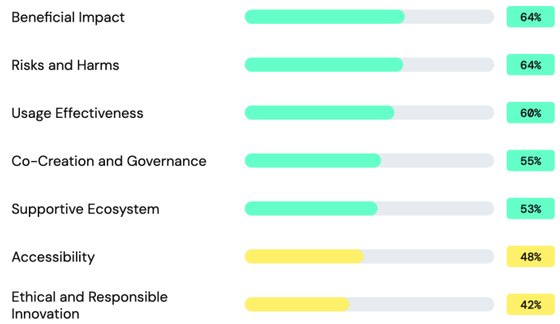
Across the 17 digital innovations evaluated so far, MDII assessments show recurring patterns in what makes a digital tool inclusive, and what gets in the way. Many of the most critical gaps fall outside the scope of traditional assessments, demonstrating the importance of a multidimensional approach.

Inclusiveness across contexts depends on how tools account for regional disparities in infrastructure, governance and socioeconomic conditions. Localisation, in particular language and contextual adaptation, emerged as a key determinant of equitable access and use.

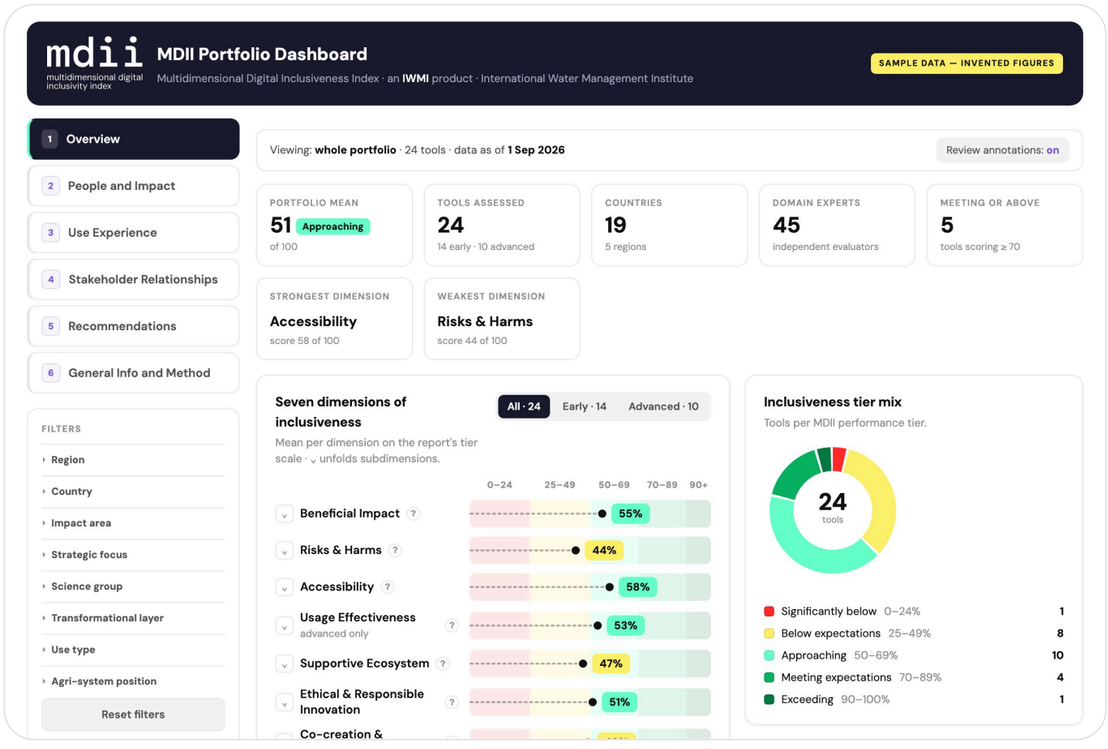
The tools score least well on ethical safeguards and accountability, on the economic side of access (costs, their predictability and subsidies), on training and support, and on adaptation to local constraints such as offline use in low-connectivity areas.

Some of the recommendations are straightforward or low-cost: offline functions, refined training materials, plain language. Others are strategic, such as data governance frameworks, transparent algorithms, or designs that adapt to the infrastructure of each setting.

While most tools are well aligned with national policies and technically sound, they face common challenges, which shows that technical relevance alone is not enough. Developers and decision-makers have clear places to embed inclusiveness throughout the innovation's lifecycle.




Average score (%) per dimension across the 17 tools evaluated by September 2026. Usage Effectiveness applies to tools already in use (8 of 17).




The public portfolio dashboard shows results across all evaluated tools, without naming any tool. Preview with sample data.

# Spreading inclusiveness in digital tools

The rapid digitisation of agrifood systems risks widening the digital divide. At the same time, even when developers make highly functional tools, it remains a struggle to reach high levels of adoption in global South contexts, especially among a diverse range of users.

MDII has proven ready to provide deep and actionable insights for digital tool developers. Seventeen tools have been evaluated in fourteen countries, and the results feed a public portfolio dashboard.

"I have used the information in a couple of grant funding proposals. I think that is where the primary benefit would be: having an independent assessment of the technology to refer to."

VIA programme administrator

Work continues to improve and streamline MDII: a free self-diagnosis that innovators can run in ten minutes, a public dashboard of results across the portfolio, private dashboards for evaluated tools, and a priority engine that ranks recommendations by their expected effect on a tool's score. New research examines intersectionality in the results and a schema-driven reporting framework.

## Make your tool more accessible and impactful with an MDII assessment

**Try the self-diagnosis** at mdii.iwmi.org/self-diagnosis, free, in about ten minutes.

**Request a full assessment** at mdii.iwmi.org/request. We reply within five working days.

**Contact mdii@cgiar.org** for detailed enquiries.

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