Agenda setting brief - 7

EMPOWERING REGIONS AND COUNTRIES

to scale demand-driven, evidence-based agri-food system solutions

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CGIAR GENDER EQUALITY AND INCLUSION

CGIAR SCALING FOR IMPACT

Beneficiaries of the EmPower project in Cambodia © UN Women/Ploy Phutpheng

INTRODUCTION

The world's population is projected to increase from over 8 billion in 2024 to 9.9 billion by 2050 (UN, 2020), calling for innovative strategies to increase agricultural productivity in a sustainable and equitable manner.

This hinges on getting transformative innovations into the hands of smallholder farmers and other agricultural value chain actors. However, these intended end-users[1], are frequently consulted only at the final stages of innovation development, when it is difficult for them to participate in co-designing the innovations or proposing better ones suitable to their needs and preferences (McGuire et al. 2024). Researchers often give little thought to scaling an innovation until it has already been designed or, in most cases, piloted. Yet this often means that we are reaching our numerical target of delivering innovations, but missing the point completely, by failing to drive societal change relevant to the end users. This is particularly true if we consider underserved groups within communities[2] who are not invited to influence design but often remain on the margins of innovation development and benefits. This not only undermines the potential impact of the innovation but also risks reinforcing existing inequities—with innovations disproportionately benefiting the better connected and already-included, and potentially doing more harm than good by widening social and economic gaps.

To avoid these outcomes, we must critically examine whose needs are prioritized in innovative processes and how scaling can be adapted to empower a wider and more diverse range of users. This requires more than strategic partnerships with end-users; it demands attention to the nature of these collaborations, the power dynamics involved, and the inclusiveness of co-design processes. We need a paradigm shift to *innovating with scale in mind* (Schut et al., 2020)—recognizing that scaling up one innovation can come at the cost of others, and that scaling is inherently political. Scaling should not displace local knowledge or practices in ways that cause harm, but rather, should respond to the lived realities of end-users and ensure that no group is left behind.

Yet current scaling approaches often fail to address the nuanced and socially differentiated impacts of innovation uptake (Wigboldus, 2018). Indicators used to measure scale rarely account for how different groups, especially marginalized communities, experience innovation differently. Most efforts also overlook the role of social innovations, such as shifts in policy, culture, and knowledge systems, which significantly shape who adopts what and who benefits. Without this lens, scaling risks being reductionist and exclusionary. Moreover, scaling is often approached as a linear technical process, neglecting the complex, adaptive nature of agrifood systems and the importance of co-creation and iterative learning with stakeholders (Hermans et al., 2019). As a result, many promising innovations fail to generate impact at scale or to sustain long-term adoption.

The scaling of agrifood technologies often fails to bridge the gap between research outcomes and the needs of diverse end-users, resulting in low adoption rates (CGIAR 2020). The CGIAR annual performance report 2021 stated that out of 1,152 innovations developed, 203 were available for uptake, and only 69 (6%) were actually adopted by end users (CGIAR 2021). Such a low return on investment indicates that it is time to try radical new scaling approaches. In addition, what do we know about those 69 adopted innovations? Who took them up? Did adoption lead to livelihood improvements? Did the innovations benefit one group over another?

This brief is a call to action. It urges a redefinition of innovation scaling—from a linear "last mile" push to a participatory "first mile" approach that is rooted in local knowledge, continuous feedback, and the lived experience of diverse users. Studies have shown that participatory research that involves farmers from the outset enhances adoption rates and perceived relevance of technologies (Witcombe et al. 2011; Pawera et al. 2024). Researchers must be willing to set aside preconceived notions of what communities need and instead co-create solutions with them. Only by doing so can CGIAR innovations achieve meaningful uptake and equitable impact across all social groups.

In Myanmar, Beyond Access is supporting the Myanmar Book Aid and Preservation Foundation (MBAPF) to convene government, the private sector, and librarians to adapt their vision for public libraries to a rapidly transforming society with increasing information needs - Myanmar © Beyond Access

1) End users are individuals or groups who ultimately use or benefit from a product, service, or system. They are the final recipients in a development process, interacting directly with the output to meet their needs or solve specific problems. End users can include farmers, consumers, policymakers, institutions or community members who apply the solutions in real-world settings.

2) Underserved communities are persons that do not have equal opportunities to resources and information such as youths, migrants, persons with disability, women etc.

SHORTCOMINGS IN OUR CURRENT APPROACHES AND SCALING METHODOLOGIES?

Scaling of agrifood technologies often fails due to a combination of institutional, socio-economic, and contextual challenges.

One major issue is the limited alignment between technologies and local user needs, capacities, and farming systems, which reduces adoption rates (Douthwaite et al., 2003). Additionally, weak institutional support, including inadequate extension services and market linkages, hampers widespread dissemination (Wigboldus et al., 2016). Scaling efforts also tend to overlook social and gender dynamics, leading to inequitable access and unintended consequences for marginalized groups (Sterling et al., 2020).

Current scaling methods prioritize quantifiable, technology-driven outputs (Schut et al. 2020; Lang et al. 2022)—focusing on metrics such as the number of products, users, and outcomes. While these metrics provide short-term success indicators, they fail to address the nuanced and socially differentiated impacts of innovation uptake. Additionally, they often fail to prioritize social innovations—such as changes in policy, culture and knowledge that influence how innovations are adopted and benefit different groups of end-users.

Most scaling efforts tend to be reactive and driven by short-term project goals 'scaling out' – expanding the reach of innovations to more people and geographies – rather than incorporating methods for 'scaling deep'- the deep personal and broad transformational work that is required to ensure longer-lasting, sustainable change for all (Hillenbrand et al. 2024; Moore et al. 2015). They often overlook the complexity of context-specific, normative and power structures affecting decision-making at every stage of innovation and research processes (Lang et al. 2022). In some contexts, local elites or dominant policy actors disproportionately influence which innovations are piloted, marginalizing the already disempowered groups such as landless youth or indigenous women farmers (Eidt et al. 2020). Additionally, scaling is often framed by biophysical scientists, typically operating in controlled lab-based environments - outside of their sphere of influence (Schut et al. 2020), limiting their ability to understand the complexities of real-world impact on the intended end users. This disconnect can limit their understanding of real- world complexities and reduce the likelihood of achieving meaningful societal impacts (Collins 2018; Kristjanson et al. 2017). As a result, important aspects of social differentiations including gender dynamics are often misunderstood or ignored exacerbating inequalities threatening the long-term viability of innovations (Vemireddy and Choudhary 2021; Tarjem et al. 2022). This suggests that scaling might even exacerbate vulnerabilities for marginalized groups[3] or lead to other unintended negative consequences. Despite acknowledging the importance of GESI considerations, many scaling efforts treat these as secondary or instrumental goals—viewing GESI as a tool for enhancing productivity rather than as a crucial objective. Nor is it clear how conventional scaling approaches reach, benefit, and empower marginalized groups, or how they address the structural barriers that hinder inclusive scaling (McGuire et al. 2025).

The incoming Scaling for Impact Science Program prioritizes the CGIAR's **Innovation Packages and Scaling Readiness (IPSR)** approach, in combination with other frameworks, to develop context-appropriate, inclusive scaling strategies. Within IPSR, an innovation is considered 'ready' to scale when it moves from an untested idea, to a fully mature product that performs in controlled and uncontrolled conditions. The **scaling use calculator** focuses on the implementing partners and end users of an innovation, but does not take into account the differential needs of diverse users. Before CGIAR technologies can be deemed ready for scaling, GESI considerations must be understood: Who decides which innovations to select? Who assesses their readiness and impact? Is there space for people with their multiple social identities to assess readiness according to their differential needs?

Other tools like GenderUp, Scaling Scan, and Agricultural Scaling Assessment Tool are being employed within CGIAR to strengthen the responsiveness of innovations to diverse contexts and user needs, with particular focus to gender dynamics and the broader enabling environment for scaling. These gender-responsive methods are often framed within overarching development agendas, such as the Sustainable Development Goals (SDGs), to provide pathways to understanding the lived experiences, needs, aspirations, and interests of diverse communities[4]. Scaling must be rooted in inclusive methods that embrace gender-transformative research, social justice and intersectionality, ensuring that all voices are heard and that no social group is left behind.

Family Farmers provide local knowledge at the ICARDA/ARC Test Site in Egypt © ICARDA

3) Marginalized groups are communities or populations that experience systemic disadvantages, exclusion, or discrimination due to social, economic, political, or cultural factors. These groups often have limited access to resources, opportunities, and decision-making processes.

4) Communities are groups of people who share common interests, characteristics, values, or geographic locations. They can be formed based on social, cultural, professional, or environmental connections.

In Guinea, the civil society organization PREM, supported by UN Women's Fund for Gender Equality, empowers rural women in Katfoura village by forming cooperatives to cultivate and sell Moringa, enhancing income, leadership skills, and community life. © UN Women/Joe Saade

NEW FRONTIER: SOLUTIONS TOWARD INCLUSIVE SCALING FOR IMPACT IN THE FOOD, LAND AND WATER (FLW) SYSTEMS

Given that current approaches to scaling often overlook the importance of integrating social theories and frameworks in food, land, and water (FLW), we require a paradigm shift in scaling methods - one that reimagines scaling as an equitable, holistic process grounded in social context and lived realities. Here's how we can move towards this transformation

1. Applying a feminist and social justice lens for equitable demand articulation

To build sustainable and equitable FLW systems, scaling must integrate a social justice lens, that applies an intersectionality framework to identify the needs interests, and risks borne by diverse user groups (Tavenner and Crane 2019; McGuire et al. 2025). This lens will not only recognize the exclusion of specific groups but also facilitate better decision-making by taking into account their lived experiences, needs, and aspirations. Scaling methods should thereby be grounded on frameworks emphasising feminist principles, ensuring that the ambitions of innovations align with local community agendas (Collard et al. 2018). Such frameworks promote diverse perspectives and prioritize marginalized voices, fostering a more equitable approach to innovation. The framework developed by the International Women's Development Agency (IWDA 2017) is useful for understanding the mandatory components of doing rigorous feminist research. Key principles include the use of an intersectional lens, being accountable on how research is done by embracing interdisciplinarity/transdisciplinarity, commitment to doing no harm, reflexivity, and an introspective research team (Cole et al. 2025).

Science programs and projects should engage researchers and innovation-design teams to co-create knowledge within diverse, transdisciplinary stakeholder platforms that allow for feedback and joint decision-making throughout the development, piloting and scaling of the innovation. Voicing the knowledge and the experiences of women, youth and other social included communities can foster innovations that serve all groups of people, in their diverse environments.

2. Prioritize outcome-based scaling through bundled innovation approach

Transformative impact of scaling approaches prioritizes *social outcomes*, enhancing people's options rather than replacing old technology with new solutions (McGuire et al. 2024). Technical innovation must be seen not as the sole solution, but as one of many approaches to address systemic issues such as gender inequality, poor nutrition, low resilience, and climate change. To enhance relevance, scaling strategies must be rethought to accommodate the diverse needs of end-users, including women, men, youth, and other marginalized groups. Methods must embrace evidence-based, co-design processes, such as socio-technical innovation bundling with transdisciplinary teams and diverse end-users (Nchanji et al. 2023). For example, socio-technical innovation bundles could include 'mother and baby' trials that allow farmers to select from a range of innovations for climate resilience and empowerment (Ayuya et al. 2024a). Scaling should consider the right mix of social, and technical innovation bundles and how different combinations can contribute to empowerment, resilience, food security or environmental sustainability, particularly for women and young people (Ayuya et al. 2024b). In Ghana and Timor-Leste, bundling of improved seed varieties with gender-sensitive extension services significantly increased access to and adoption of seeds and other improved technologies and changes in cropping practices (Quaye et al. 2019; Akter et al. 2020).

Shifting the focus on scaling specific technologies to scaling for equitable societal outcomes allows for a more holistic response to the complex social, economic, and environmental dynamics of agrifood systems (Wigboldus and Brouwers 2016). This outcome-oriented approach considers real-world challenges like soil variability, climate change, and socio-economic factors, necessitating context-specific solutions for sustainable, large-scale adoption (CGIAR 2020).

Innovations that prioritize equitable development – over purely technical performance–are inherently more problem-centered, offering smallholder farmers relevant, accessible, and affordable solutions (Klerkx and Rose 2020; Giller et al. 2021; Renkema and Bos-Nehles 2024). When innovations are outcome-driven from the start, scaling becomes more than just a game; it evolves into a deliberate process guided by intentional mechanisms and systematic pathways that prioritize societal outcomes rather than relying on ad-hoc approaches. Despite growing recognition of the importance of indigenous knowledge, mainstream methods often overlook how to integrate these insights into broader innovation practices. Bridging this gap can empower local communities and ensure innovations are relevant and sustainable (Van der Pol 2005).

Irrigating a farm using solar-powered water pump, Kenya © IWMI/Jeffery M Walcott / IWMI

3. Harnessing Inclusive Digitalization

Digital platforms and artificial intelligence (AI), if used wisely can expand opportunities for women, youth and socially excluded groups by providing access to agricultural, financial, and market information at low cost. While these tools have the potential to empower a marginalized population, their benefits are not distributed equally. Significant gender gap persists- rooted in inequal access to devices, connectivity and digital literacy – particularly in rural areas. (Ayamga et al. 2023).,

Nonetheless, when accessibility is addressed, digital solutions can support more informed decision-making by enabling users to identify and adopt innovations suited to their specific contexts. Digital platforms can also help overcome social and geographic isolation–for instance, by enabling women with limited mobility to connect, share knowledge, and mobilize for collective action.

Young women and men are crucial to driving the scaling and delivery of digital innovations. Their eagerness of adopting new technologies creates a strong entry point for scaling innovations in agrifood systems. Engaging young women and men may also challenge entrenched social norms that have historically hindered progress by positioning them as co-creators and leaders in innovation and scaling processes. Empirical studies have shown that when young people, especially young women, are actively involved in digital training programs, peer-to-peer learning, and participatory innovation design, they often shift community perceptions of gender roles and authority–sparking intergenerational and social change from within (Lang et al, 2010, Marzo, 2024)

AI adds further potential to leverage gender-disaggregated insights, to improve the reach of innovations and offer tailored recommendations to enhance adoption. AI can also support gender-responsive monitoring in real time, to support program and policy adjustments. Lastly, digital platforms streamline scaling across regions by pulling together multiple partnerships, and allowing for democratic access to information, at least theoretically, since there are still large digital infrastructure and literacy gaps.

Bakery Grows with New Equipment in Kyrgyzstan. Through a UN Women Program and Kumtor Operating Company grant, implemented jointly, this bakery was able to purchase three ovens, baking sheets and a machine for flattening bread dough - all of which helped to increase its production. © UN Women/David Snyder

4. Beyond Grants to Investment

Funds play a critical role in scaling scientific innovations. However, these funds are often inadequate and focus more on sustainability than equity. To create equitable outcomes, we must:

- Laise with private-sector partners for additional funding by making a business case for inclusive scaling.
- Integrate gender insights at the fund design stage, drawing on past research results to steer investors toward equitable finance goals.
- Provide technical assistance post-funding, supporting initiatives that promote social impact, for example, through targeted training for women, with their husbands, in business skills or agronomic practices.

5. Applying Transformative Research and Evaluation Approaches

We cannot talk about scaling within the CGIAR without accounting for the role of the research process behind it. Nor should we assume that scientists are the best scaling champions. A critical reflection of the diversity and evolution of pathways towards innovation and equitable scaling is key. Demand-driven technical innovations may go viral much more easily than innovations in social norms, which often require a more sustained effort. Co-designing should begin early, breaking down power barriers to amplify marginalized voices and address structural constraints. Incorporating social dimensions into scaling requires knowledge sharing so that stakeholders can define outcomes and target audiences collaboratively. Various research approaches can support an outcomes-focused, gender-transformative, co-creation and co-production process, such as participatory gender analysis (Abbott et al. 2015) multistakeholder platforms (Van Ewijk et al. 2021) and historical narratives (Palmer 2011).

To address this, it is crucial to integrate gender equality and social inclusion (GESI) into the scaling process from the onset. There must be more implementation of gender-transformative approaches (GTAs) that aim to break down restrictive social norms. McDougall et al. (2023) highlight the need to invest in a multilevel strategy of scaling out, and up, as well as in the application and outcomes of GTAs. Such an interconnected, multi-actor and multilevel approach may create a shift toward gender equality in food systems. Nevertheless, more systematic evidence is needed to understand the effectiveness of gender-transformative approaches in addressing gender inequality (McDougall et al. 2023).

Lastly, existing methods for gender-responsive evaluation can shift power dynamics, enabling communities to define their indicators for success. CGIAR scaling evaluation tools should draw on these methods to employ indicators that capture changes beyond participation, such as leadership, decision making, behavior and attitudes. Indicators should also emerge from discussions with communities regarding what changes they want to see and measure. These tracking tools should not only capture quantitative and qualitative indicators but also encompass transdisciplinary processes -- collaborative approaches that integrate knowledge across disciplines and sectors while actively involving non-academic stakeholders such as farmers, local leaders, and civil society groups. Examples include participatory action research, co-design workshops, and innovation platforms where diverse actors jointly identify problems, shape solutions, and assess progress. These processes are essential for advancing socially inclusive innovation scaling because they ensure that multiple perspectives, especially those of marginalized groups, shape both the innovation and the pathways for its adoption. They should be used more than once, to allow for iterative and adaptive management over time.

CONCLUSION

To scale innovations that support the equitable transformation of food, land and water systems, we must embrace a holistic approach that puts social inclusivity center stage.
This approach requires actively engaging with the multifaceted social, economic, and environmental dimensions of scaling.

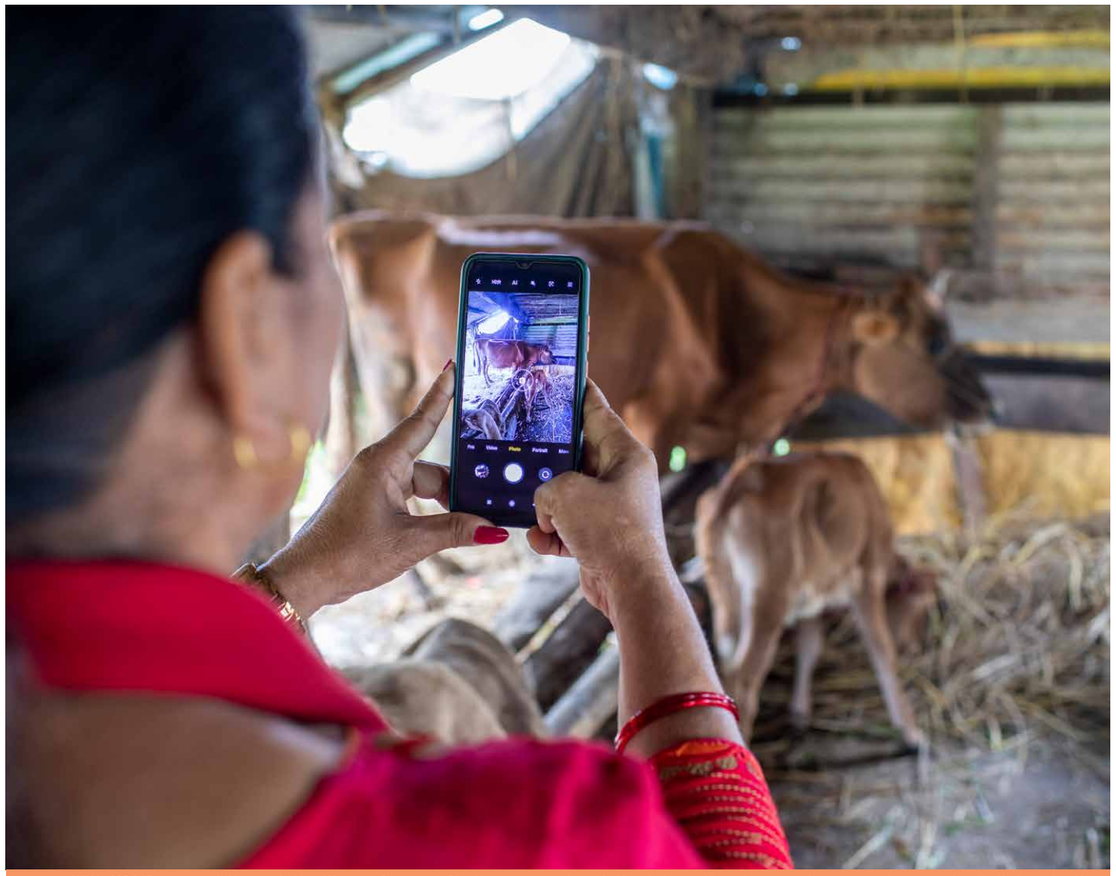
Innovations should be co-designed and implemented with a keen awareness of trade-offs and unintended consequences that may arise. Systematically engaging diverse stakeholders—including underserved groups such as women, young people, and smallholder farmers—early in the design phase ensures that scaling ambitions are aligned with the needs and priorities of communities. This collaboration helps to craft innovations that are effective and equitable, while also being responsive to the broader ecological context. Identifying and overcoming barriers early and at different scales (communities and institutional level among others) is crucial for achieving transformative impacts that emphasize societal benefits, engage multi-stakeholder networks, and employ reflexive monitoring practices to ensure lasting change.

Agricultural research for development (AR4D) must prioritize gender-responsive and inclusive scaling methods that engage diverse voices and perspectives. Mainstreaming inclusive and sustainable scaling strategy development is essential as we collaborate across different science programs to deliver solutions across food, land and water systems. We must:

- Earmark targeted budgets to ensure that gender and social inclusion issues are explored for scaling innovations.
- Co-develop guides and manuals on how to achieve equitable scaling. This will allow for more tailored and contextualized approaches. Being more in tune to the needs and aspirations of different groups will lead to better scaling of innovations.
- Advocacy and communication with donors and other investors will help to develop fit-for-purpose scaling pathways and garner co-investment in scaling.
- Be realistic about what can be scaled, not how quickly. Focus on optimal scale - balancing the magnitude, diversity, and fairness of outcomes when scaling a proven innovation. This includes discussions with in-country partners on trade-offs, recognizing that their positions may be cooperative, competitive, or complementary. In the optimal scale bigger is not always better.

- The Scaling for Impact program is the first of its kind to specifically target the science and practice of scaling across the CGIAR portfolio. The program provides an opportunity to be more systematic in adopting these approaches. This holistic approach will enable us to feed a growing population while fostering equity for all stakeholders, if their demands are prioritized to support CGIAR's comparative advantage, and if the portfolio is better aligned with emergent opportunities and enabling conditions.
- By focusing on outcomes, co-designing with communities, and grounding our strategies in social science theory, we can create and scale innovations that are not only technically advanced but also socially transformative.

Young and older adults sharing information in relation to the infographics in the workshop - Perú © Marlon del Aguila Guerrero/CIFOR



With USAID support through the WomenConnect Challenge, grantee Heifer International connects women farmers to digital agriculture content to improve production and help them scale their businesses. © Narendra Shrestha for DAI.

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ACKNOWLEDGMENTS

The authors gratefully acknowledge Steve Cole (IITA) and Els Lecouture (CGIAR Gender Platform) for their critical review and thoughtful inputs to the draft brief. We would also like to thank all the participants of the CGIAR GENDER Impact Platform Science Exchange 2024 who provided inputs at the initial stages of document development.

The CGIAR Gender Equality and Inclusion Accelerator and the Scaling for Impact Science Program are grateful for the support of the CGIAR Trust Fund Contributors: www.cgiar.org/funders.

ABOUT THIS SERIES

This brief produced jointly by the CGIAR Gender Equality and Inclusion Accelerator and the CGIAR Science Programs, is one in a series of agenda-setting briefs that aim to further develop an agenda for strategic areas of gender and social inclusion research within the new portfolio of CGIAR Science Programs and Accelerators, and inform the development of gender and inclusion strategies for these moving forward. The briefs are the culmination of a collaborative work that started during the CGIAR GENDER Science Exchange 2024 that convened 72 gender researchers from across the CGIAR to bring together experiences, ideas and insights from across centres, that can help in developing a gender strategy for the SP in the future.

About CGIAR Gender Equality and Inclusion (GENDER Accelerator)

CGIAR Gender Equality and Inclusion is CGIAR's Accelerator working to put equality and inclusion at the heart of food systems research and development. The Accelerator leads strategic and innovative research that advances gender equality, opportunities for youth, and social inclusion across CGIAR's Food, Land and Water Systems portfolio.

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