CGIAR
SCALING FOR
IMPACT

Report

Scaling water solutions: a report on the IWMI special session at XIX IWRA World Water Congress, Morocco

Seifu A. Tilahun, Youssef Brouziyne, Sanju Koirala, and Pacem Kotchofa

December 2025

Authors

Seifu A. Tilahun, International Water Management Institute (IWMI), Accra, Ghana
Youssef Brouziyne, IWMI, Cairo, Egypt
Sanju Koirala, IWMI, Lalitpur, Nepal
Pacem Kotchofa, IWMI, Vientiane, Lao PDR

Acknowledgments

This work was undertaken as part of the CGIAR Scaling for Impact (S4I) program.
We would like to thank all funders who supported this research through their contributions to the CGIAR Trust Fund (www.cgiar.org/funders/).

We extend our sincere appreciation to our partners, stakeholders, and collaborators whose expertise, insights, and commitment have contributed significantly to shaping this work. Their contributions have been instrumental in advancing CGIAR's ambition to scale proven innovations across food, land, and water systems, fostering impact that is inclusive, sustainable, and transformative.

We also recognize the continued support and collaboration of national and regional partners, whose engagement ensures that the solutions developed are responsive to local needs, strengthen innovation systems, and contribute to building more resilient agrifood systems.

Citation

Tilahun, S. A.; Brouziyne, Y.; Koirala, S.; Kotchofa, P. 2025. *Scaling water solutions: a report on the IWMI special session at XIX IWRA World Water Congress, Morocco.* Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Scaling for Impact Program. 12p.

Front cover photo: Panelists during the event (credit: Youssef Brouziyn, 2025)
Back cover photo: Panelist presenting during the event (credit: Youssef Brouziyn, 2025)

Disclaimer

This publication has been prepared as an output of the CGIAR Scaling for Impact Program and has not been independently peer reviewed. Responsibility for editing, proofreading, and layout, opinions expressed, and any possible errors lies with the authors and not the institutions involved. Boundaries used in the maps do not imply the expression of any opinion whatsoever on the part of CGIAR concerning the legal status of any country, territory, city, or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Borders are approximate and cover some areas for which there may not yet be full agreement.

Content

List of figures

Background

Water scarcity is intensifying worldwide as climate change, population growth, and increasing demands on land and water resources place unprecedented pressure on already fragile systems. Globally, 3.3 billion people live in regions highly vulnerable to climate risks, and more than 2.3 billion people face moderate to severe food insecurity. These pressures magnify the challenge of sustaining agricultural production systems, safeguarding livelihoods, and strengthening the resilience of smallholder-dominated food systems. At the same time, many water and agricultural innovations fail to reach scale due to fragmented institutions, weak enabling environments, limited financing, and misalignment between solutions and user needs. Despite decades of research and pilot successes, large-scale adoption of water-smart technologies such as solar-based irrigation, climate-resilient water systems, and digital tools- remains limited.

Against this backdrop, the International Water Management Institute (IWMI), working through CGIAR's Scaling for Impact (S4I) program, aims to close the science-to-scale gap in water solutions. S4I supports stakeholders by strengthening governance systems, addressing market and policy bottlenecks, developing finance solutions, and fostering inclusive partnerships that enable demand-driven adoption of innovations (Bodach et al., 2025). The XIX IWRA World Water Congress provided an ideal platform to bring together policymakers, researchers, water authorities, financiers, and private-sector actors to reflect on what it truly takes to scale water solutions in an increasingly water-scarce world.

This special session responded to the urgent need for coordinated, inclusive, and finance-ready approaches that deliver real-world impact at scale, moving beyond pilots toward long-term system transformation.

Objectives

The objective of the special session was to facilitate dialogue on how to scale water solutions in water-scarce environments by highlighting IWMI and partners' work under CGIAR's Scaling for Impact program. Specifically, the event aimed to:

- Showcase scaling pathways for solar-based irrigation, climate-resilient water systems, and enabling-environment innovations drawn from IWMI's research across Africa and Asia.
- Encourage reflection on governance, finance, and partnerships required to move from isolated pilot successes to sustained system-wide adoption.
- Provide a platform for practitioners, policymakers, and private-sector actors to discuss practical mechanisms for inclusive scaling, ensuring women, youth, and local institutions are active participants and beneficiaries in the scaling process.
- Highlight innovations in scaling science within CGIAR, including demand signaling, enabling environment analysis, blended finance models, and the S4I scaling framework.

Description of the event

The side event, held on 4th December 2025 at the XIX IWRA World Water Congress in Marrakech, brought together more than 20 participants from government agencies, international organizations, academia, finance institutions, civil societies, and the private sector. Organized by IWMI and CGIAR partners, the session explored how water innovations can be scaled in a rapidly changing, water-scarce world.
The session opened with a welcome remark by IWMI's Youssef Brouziyne, followed by an introduction to the CGIAR Scaling for Impact (S4I) program by Seifu Tilahun. This segment also included a Mentimeter poll that invited participants to reflect on the most significant barriers to scaling water innovations, where they highlighted finance constraints, fragmented governance, and weak institutional capacity as dominant challenges.

A presentation by Seifu Tilahun showcased IWMI's work on inclusive scaling of solar-based irrigation, drawing on experiences from Ghana, Kenya, Ethiopia, and Nigeria. The presentation emphasized the S4I impact program (Figure 1a) and IWMI's broader contribution to S4I activities (Figure 1b). Then, a presentation on one of the water solution, scaling solar based irrigation, was presented (Figure 2) showing some specific activities that span across the S4I areas of work such as farmer segmentation, and suitability mapping to signal demand, co-designed scaling pathways for solar-based irrigation, private-public engagement and market linkage as an enabling environment, blended finance facilities to achieve impacts, and a process-based evaluation framework for learning effects.

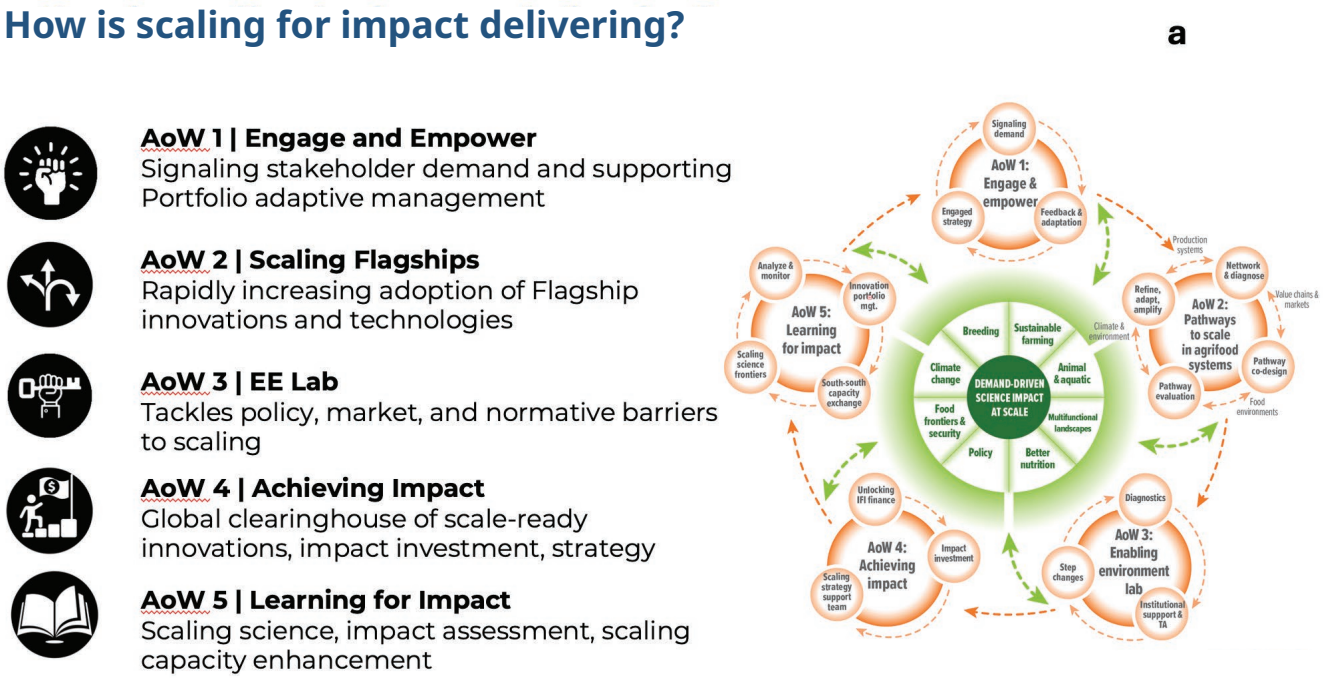

Figure 1a: Scaling for impact (S4I) areas of work and IWMI's activities (Source: CGIAR, 2024)

IWMI activities include

b

CGIAR **Demand Signaling Methodology** Toolbox

Prototype **demand intelligence dashboard**

Curated **inventory** of demand signaling

Guideline and methodological approach for **innovation demand segmentation**

Scaling soil and water management innovations

Scaling smart irrigation and climate-resilient water systems

Scaling Water-related circular economy solutions

EE Methods Toolbox (digital platform)

EE success and failure stories

EE Framework **for Innovation Scaling** in Agrifood Systems

EE Step Changes: Partnership engagement in co-design of market interventions, policy outcomes, and for inclusive barrier

Develop a blended finance facility for irrigation innovation scaling in Kenya

Mobilizing CSR blended financing for proven bundles of water resilience & LLA for Climate in India

TA to Ghana to support Oil Palm investment programming in partnership with TAAT

A **holistic scaling evaluation framework** for process-tracing and other methods

Global South university inventory and analysis
5 collaborations/ partnerships

Figure 1b: Scaling for impact (S4I) areas of work and IWMI's activities (Source: Authors made)

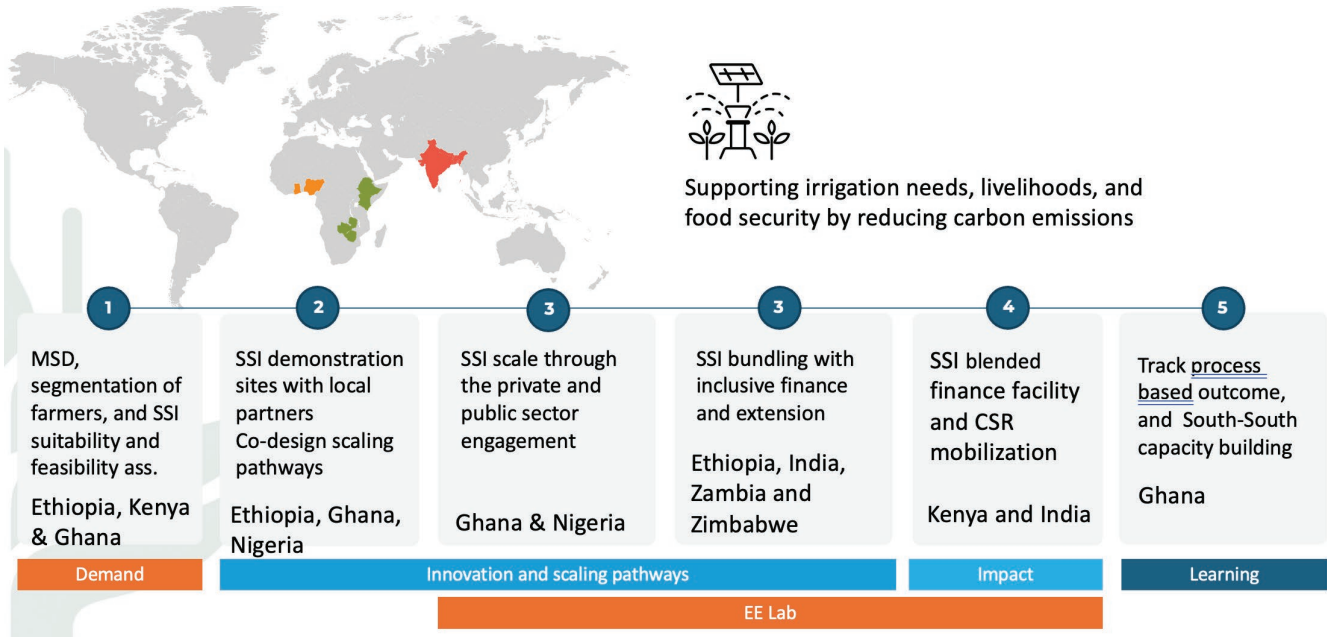

Figure 2: IWMI's activities in scaling solar based irrigation across different regions (Source: Authors made)

This was followed by Panel Discussion Round 1, facilitated by Youssef Brouziyne, where panelists from College of Agriculture and Environmental Sciences of UM6P - Mohammed VI Polytechnic University, ABHOER of Ministry of Equipment and Water, Islamic Organization for Food Security, and the International University of Rabat discussed how institutions can make scaling more inclusive and gender-responsive, and what partnerships are needed to sustain scaling efforts.

Photo 1: Panelists during the event (credit: Youssef Brouziyn, 2025)

A second presentation by Sanju Koirala provided some insights on the Enabling Environment success stories from Asia, highlighting how collaboration with government and communities from the initial phase, research-driven processes, policy alignment, multi-stakeholder platforms, transparent and inclusive governance structures, and financial gains together create the foundation for sustainable scaling of innovations (Figure 3).

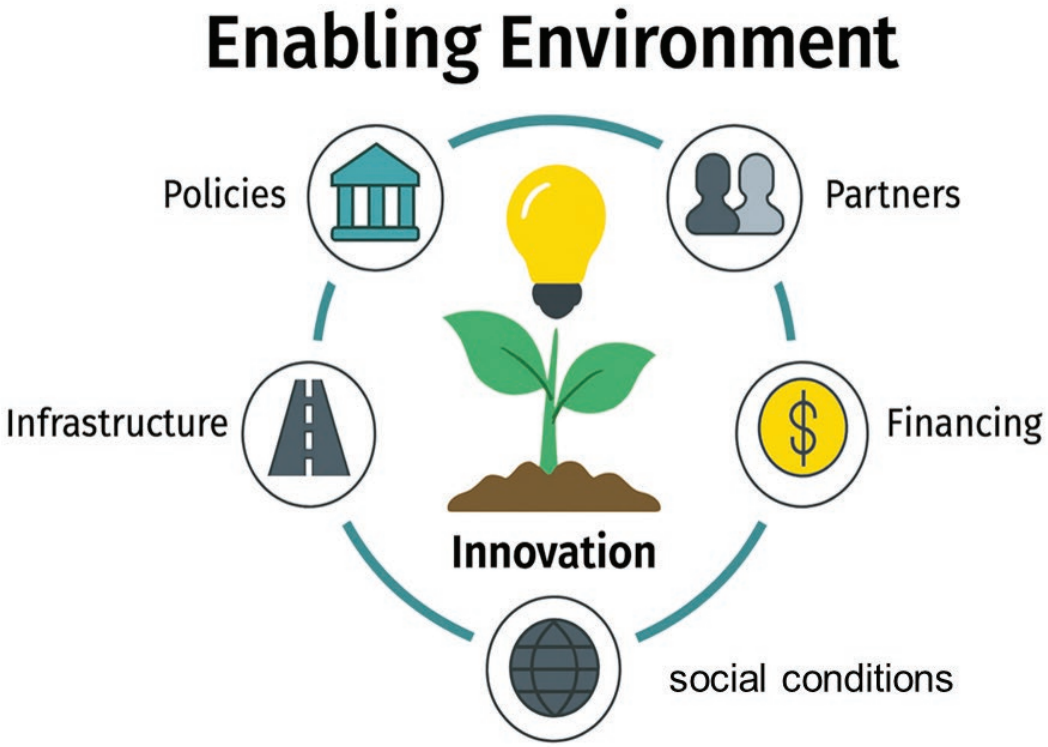

Figure 3: Elements of the enabling environment (Source: Authors made)

Event Panelists (credit: Youssef Brouziyn, 2025)

A second panel discussion round 2, moderated by Pacem Kotchofa, focused on the regional challenges related to water conflicts as well as the needed enabling environments that could promote transparency, reduce water conflict, and ensure sustainable scaling of irrigation solutions.

Key highlights of the special sessions

Throughout the session, panelists and participants stressed:

1. **Finance is the critical barrier to irrigation innovation for smallholders and local institutions**.
   Across the special session participants, the most frequently cited barrier to scaling water innovations is limited access to finance, including high capital and operational expenditure costs, insufficient funding for smallholders, and inadequate financial mechanisms to support adoption. Several participants emphasized that without affordable capital, subsidies, or tailored financial products, even the best technologies remain out of reach. Closely linked to this is low awareness, where users and institutions lack the information, skills, or exposure needed to understand and adopt new water solutions. Participants also highlighted resource and manpower constraints, noting shortages of technical staff and limited diffusion of innovations to end users. Additional barriers include contextual challenges, such as the need to adapt solutions to diverse local environments, the absence of a "one-size-fits-all" model, and limited ambition or ownership among implementing actors. Institutional issues, such as silos, fragmented coordination, and a narrow focus on water rather than whole-system considerations, were also mentioned. Some participants stressed the importance of providing cost-effective options for smallholders and addressing governance gaps that hinder widespread uptake. Overall, the participants pointed to a combination of financial constraints, limited awareness, inadequate institutional capacity, and poor contextual fit as the core obstacles preventing water innovations from reaching scale.

2. **The importance of addressing unintended consequences that only emerge at scale**.
   In research for development, fully understanding the challenge as a system is essential, yet is too often overlooked or viewed only from a narrow perspective. When challenges are not adequately understood, pilots and demonstrations tend to be conducted in controlled environments where conditions are optimized and risks minimized, meaning pilots rarely fail. However, once these solutions are transformed from controlled settings to real-world contexts, unintended consequences frequently emerge, especially on scale. To avoid these pitfalls, scaling processes must be grounded in the livid realities, needs, and priorities of the communities involved. This requires adapting innovations to the local context and ensuring that local actors are positioned at the center of scaling governance. Their insights should guide decisions, shape implementation, and safeguard against negative outcomes that only become visible during wider adoption.

3. **The centrality of local actors, women, and youth in scaling pathways**.
   Allocate dedicated time and resources to meaningfully include youth, women, and marginalized groups, ensuring their voices influence design, adaptation, and decision-making. Make the entire scaling process participatory, equitable, and responsive to local knowledge and perspectives. Further, educating young people for the future is essential.

   The experience in Morocco with scaling Sanitation Safety Planning tool for water systems quality preservation in Ourika watershed under CGIAR S4I, where this solution was first piloted with IWMI and later successfully scaled, demonstrates what is possible when local actors are genuinely engaged. Proper documentation, clear operational manuals, and strong political will

created the conditions for both effective piloting and long-term adoption. Most importantly, the process was deeply participatory, enabling community members to articulate their specific needs and priorities. This experience reinforces that scaling succeeds when it is co-owned by local actors, grounded in their realities, and supported by systems that value inclusivity, local leadership, and sustained learning.

the process was deeply participatory, enabling community members to articulate their specific needs and priorities. This experience reinforces that scaling succeeds when it is co-owned by local actors, grounded in their realities, and supported by systems that value inclusivity, local leadership, and sustained learning.

4. **Strengthening institutional collaboration for water security**.
There is a need for stronger institutional collaboration to overcome fragmentation and reduce water conflicts worldwide, especially in the MENA region. This requires a multi-stakeholder, cross-sectoral approach that brings together government agencies, water users, private-sector actors, and local communities to reconcile differences and promote transparent, equitable, and productive water use and allocation. Such collaboration should be reinforced by robust institutional frameworks, including clear water laws, comprehensive master plans for water use, and strategies for aquifer recharge. Additionally, digital tools for monitoring disaggregated water use can help detect and address potential overuse, improving accountability and enabling more informed decision-making not only across the region but also the globe.

The event concluded with a wrap-up by Seifu Tilahun, emphasizing that a significant barrier for scaling is finance, which requires coordinated action across all, and appreciated the active participation of the panelists and participants in the session.

Conclusions

The special session highlighted that scaling water solutions in a water-scarce world requires moving beyond isolated pilots toward coordinated, system-level action. Discussions underscored finance as the most critical bottleneck, alongside fragmented governance, limited institutional capacity, and weak alignment with local contexts. Participants emphasized that successful scaling depends on inclusive pathways that place local actors, women, and youth at the center of decision-making, while anticipating unintended consequences that emerge at scale. Experiences shared from Africa, Asia, and MENA demonstrated that political will, strong partnerships, clear operational frameworks, and innovative finance mechanisms are essential enablers. Overall, the session reaffirmed IWMI and CGIAR S4I's role in bridging science, policy, and finance to achieve sustainable, equitable water solutions at scale.

Reference

CGIAR. 2024. CGIAR Scaling for Impact Program: Full design document. Agenda item SC21-05a, 21st CGIAR System Council meeting, Berlin, Germany, 11-12 December 2024. Montpellier: https://hdl.handle.net/10568/162816

Bodach, S.; Al-Zu'bi, M.; Tilahun, S. 2025. Lessons learned from solar irrigation scaling in Asia and Africa. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Scaling for Impact Program. 18p.


XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco 1 - 5 December 2025

CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations, and the private sector. www.cgiar.org

To learn more about this program, please visit:
https://www.cgiar.org/cgiar-research-portfolio-2025-2030/scaling-for-impact/

Contact
Seifu A. Tilahun – Hydrology and WRM, IWMI, Accra, Ghana (s.tilahun@cgiar.org))

CGIAR SCALING FOR IMPACT

IWMI International Water Management Institute

XIX WORLD WATER CONGRESS
International Water Resources Association (IWRA)
Marrakech, Morocco | 1–5 December 2025