Photo by Bappy Kumar Mohonto, IRRI

SUCCESS STORY

Agricultural Water Insecurity Experiences (AgWISE) Module

Innovation Name
Agricultural Water Insecurity Experiences (AgWISE) Module

Location (Country/Region)
Bangladesh

Lead centres
International Rice Research Institute, International Water Management Institute

Contributing Initiative/s/ Bilateral project/s
Asian Mega-Deltas

Innovation Type
Service

Current Innovation Readiness Level
3
Proof of Concept

Current Innovation Use Level
2
Partners

Scaling Dimensions Achieved
Scaling Up

Challenge Addressed
- Policy & Regulatory Framework
  Weak enforcement/compliance mechanisms; Lack of supportive legal frameworks
- Institutional Capacity
  Weak coordination among institutions
- Infrastructure and Services
  Poor quality of public services
- Knowledge & Information Systems
  Data gaps, Limited access to relevant knowledge/ information, Weak research-to-practice linkages

Enabling Environment Methods
Participatory Rural Appraisal, WISE scales

SDG Targets

CGIAR Impact Areas

Women's water needs are traditionally understood as relating to water accessed and used for drinking, cooking, and other domestic tasks, including caregiving. The Agriculture Water InSecurity (AgWISE) module is an adaptation of the Water Insecurity Experiences (WISE) Scales. Co-designed with Northwestern University and in a participatory manner with local communities in southern coastal Bangladesh, AgWISE was applied in Bangladesh to generate evidence of women's experiences of water insecurity in relation to agrifood systems. The AgWISE is a methodological innovation—a set of simple, context-specific questions that helps translate women's everyday agricultural water insecurity experiences into actionable evidence and insight for water policy and governance interventions. The AgWISE tool allows for quantifying the material, as well as the rarely assessed relational and psychosocial experiences of water insecurity. In Bangladesh, our focus was on assessing intersectional gender disparities in agrifood systems focusing on class, religion, age and ethnicity. Designed to ensure flexibility and adaptability to the local context, the tool generates reliable data and evidence to enable more inclusive climate adaptation, food security, and gender-equity interventions. Evidence from the AgWISE module is presented across multiple forums and policy platforms to inform potential revisions to the National Women Development Policy and to guide the planning and implementation of Gender Responsive Budgeting initiatives.

Context and Ambition

Bangladesh is a climate-agriculture-inequality hotspot in Asia. Increasing intensity of floods and droughts, erratic rainfall, and salinity intrusion result in high unreliability of water resources, impacting agricultural productivity and deepening vulnerability among the country's smallholder and landless farmers, who account for more than 90% of the total. In the coastal deltas, aquaculture intensification has further impacted freshwater resources. These challenges have triggered male outmigration, leading to an increasing feminization of agrifood systems.

As women's work in agrifood systems intensifies, they remain excluded from water infrastructure decisions and the governance of water. Furthermore, in situations of water crises and conflicts, powerful males in local communities often appropriate freshwater resources. The AgWISE tool helps capture this growing inequality in water security and provides data to inform more inclusive water policy and governance of agrifood systems.

The objective of the intervention was to develop and validate a tool to assess the gendered dimensions of water insecurity experiences in agri-food systems and validate its applicability in generating gender- and socially disaggregated evidence on access, reliability, and adequacy of water required for productive needs. The goal was to provide evidence to inform relevant policies, institutional arrangements, and interventions to strengthen more equitable and inclusive water for agrifood systems, and to enable inclusive monitoring, evaluation, and learning.

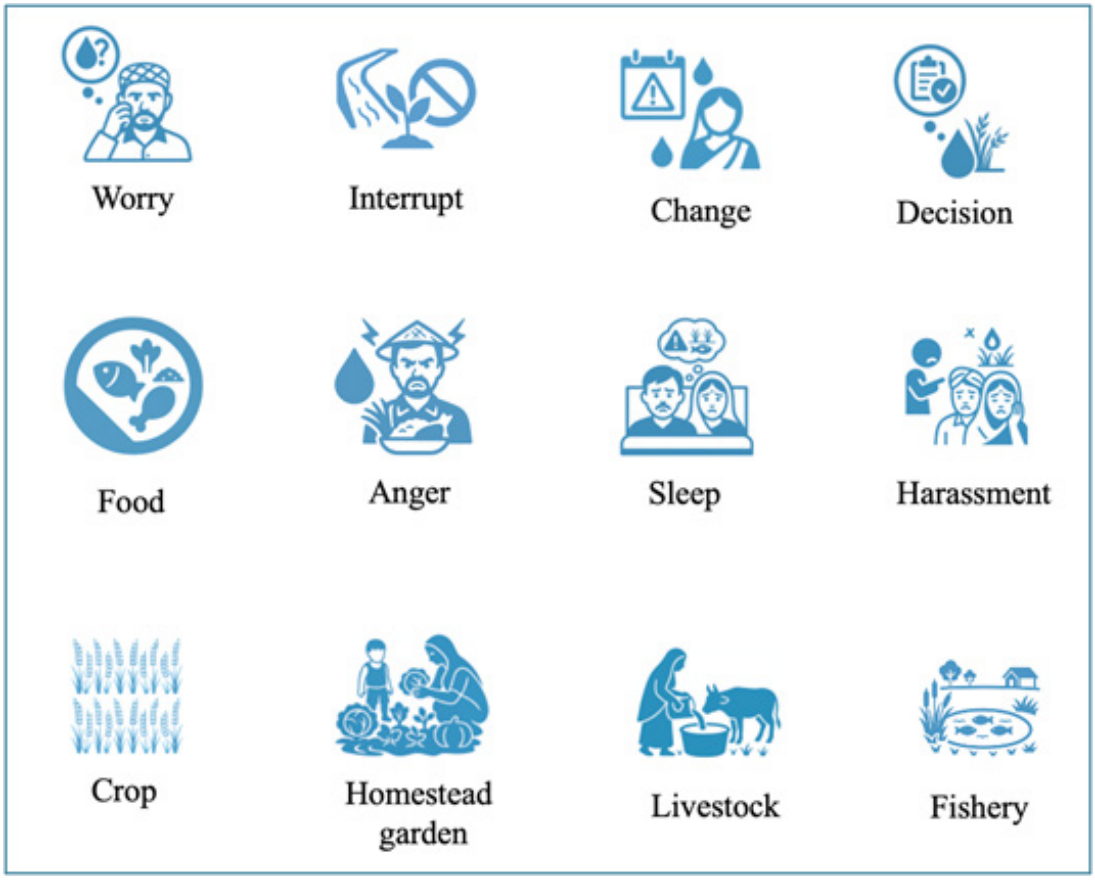
Creating the Enabling Environment for Scale

The CGIAR Initiative on Asian Mega-Deltas supported study in Bangladesh in 2023-2024 highlighed two key issues, which are documented as a Policy Brief: (i) food, water, and environment policies and interventions in Bangladesh vary in their addressing of socio-ecological interrelations, and in the representation and participation of marginalized communities ; and (ii) gaps in effective implementation of policies result in local experiences of food insecurity, climate risks, and vulnerability of the most marginalized groups, including women.

These findings were validated by key institutional actors at a Policy Dialogue workshop hosted by the Bangladesh Agriculture Research Council (BARC) in 2024. At the workshop, it was noted that freshwater was a contested resource in the coastal deltaic regions, and that smallholder farmers were particularly water insecure. The AgWISE tool was developed to address two key gaps identified at the workshop: firstly, the lack of data and evidence on how productive water stress impacts women farmers, and second, the need for inclusive policies and planning.

AgWISE builds on the Water Insecurity Experiences (WISE) Scales - of a set of questions to assess water insecurity experiences. The innovation in focus is the adaptation of the WISE scales to focus on water for productive use - for agrifood systems. AgWISE was co-designed with local communities, both women and men through participatory field visits, focus group discussions and household and individual interviews with men and women, particularly those from marginalized groups. The AgWISE tool assesses not only the physical challenges of water access but also the relational and psychosocial dimensions of water insecurity. Designed to ensure flexibility and adaptability to local context, the tool allows generating reliable data and evidence to enable more inclusive climate adaptation, food security, and gender-equity interventions.

Participatory Rural Appraisal (PRA) tools helped identify local challenges and refine indicators for crops, livestock, homestead gardens, and fisheries. The tool was translated, piloted, iteratively refined, and supported by gender-sensitive enumerator training to ensure inclusivity and contextual fit. Accordingly, AgWISE includes twelve indicators that are individually scored to construct an Agricultural Water Insecurity Index, which can be disaggregated by gender. The AgWISE module user guideline is available online.



Agricultural Water Insecurity Experiences Indicators

The 12 items of Agricultural Water Insecurity Experiences module

Label		Item	Score
	**Worry**	(1) In the past 12 months, how often did you **worry** about problems with water (e.g., too much, too little, not clean, conflicts about water, other problems) for food production?	
	**Interrupt**	(2) Please think about your water sources, how often were there **interruptions** in accessing and using this water during the last 12 months?	
	**Change**	(3) In the past 12 months, how often did water problems related to farming, veterinary care, aquaculture and food processing activities result in a **change** in your day-to-day life, livelihood activities or other plans?	
	**Decision**	(4) In the last 12 months, how often did **decisions** made by others about your key water sources affect the way you accessed and used water?	
	**Food**	(5) Still thinking about the last 12 months, how often did you have to change or reduce what you normally **eat** because of problems with water for food production/ processing?	
	**Angry**	(6) In the last 12 months, how often did you feel **angry** because of problems you were experiencing with water for food production and processing?	
	**Sleep**	(7) In the last 12 months, how often did you have difficulties **sleeping** because of issues with water for food production and processing?	
	**Harassment**	(8) In the past 12 months, how often did you experience **harassment** while collecting or using water for food production and processing?	
	**Crop**	(9) Now thinking specifically about crop production, in the last 12 months, how often did water-related problems harmed **crop** production and processing?	
	**Homestead garden**	(10) Now thinking specifically about homestead gardens, in the last 12 months, how often did water-related problems cause issues for your **homestead garden**?	
	**Livestock**	(11) Now thinking specifically about livestock, in the last 12 months, how often did water-related problems affect the **livestock** you look after?	
	**Fishery**	(12) Now thinking specifically about inland fisheries, aquaculture, or both, how often did water-related problems affected the availability and access to these resources, or your related production and processing activities in the last 12 months?	
		Total	

The Intervention and Actions

Piloted and validated, the AgWISE module is positioned for wider institutional uptake and scaling. Key actors for scaling the AgWISE module in Bangladesh included local institutions responsible for water governance, national government agencies, national and international research organizations, NGOs, and academia. Two policy workshops were conducted in 2024 to present the tool to relevant national Ministries, departments, civil society, and academia. Discussions are underway with the Ministry of Finance to discuss the potential to allocate resources to pilot the module in six climate hotspots in Bangladesh, through the country's Gender Responsive Budgeting (GRB) instruments. Evidence from the application of AgWISE was shared with relevant government of Bangladesh stakeholders in multiple forums at national and local levels, and through a policy dialogue workshop. The research team were invited to contribute to various events informing a review of the National Women Development Policy. The Bangladesh National Review for Implementation of the Beijing Platform for Action (2024) outlines the need to empower women to cope with climate change impacted water resources challenges including planning, implementation and management of resilient livelihoods and drinking water solutions. Currently under the Scaling for Impact Initiative, there are discussions with the Ministry of Finance to use these insights to inform gender-responsive budgeting, and better track spending and outcomes. AgWISE is also being considered for integration into the gender-sensitive monitoring frameworks of agricultural extension services and community-based water management, and there is potential for the tool to guide adaptive irrigation schemes and water infrastructure planning for marginalized farmers, particularly for women.

During the dry season, canals in coastal Bangladesh dry up from climate change, salinity, and maladapted policies. Farming and domestic water use become difficult, deepening rural hardship. AgWISE tools track water challenges, revealing how they disproportionately impact women and marginalized groups.

Photo by the Center for Natural Resource Studies

"In Chaitra (March) to Jaistha (May), not a drop of water is available in the canals or ponds. Until the rains come, our fields remain barren. In the last few years, it has rained late, so we harvest the dry season rice late, which means we cannot grow vegetables in time in the winter months. In any case, by Karthik (October), the groundwater turns saline."

- **51-year-old female farmer**, Khulna district

Internationally, AgWISE has been presented in platforms such as the Gobeshona Conference, and the FoodWISE Asia Pacific Regional Meeting on Food and Water Security hosted by UNSW Global Water Institute, the University of Technology Sydney, and Northwestern University. These engagements helped increase visibility, credibility, and cooperation across public, private, and research sectors for scaling. Our key focus is to strengthen partnership with Northwestern University to enable a more global piloting and scaling of AgWISE.

Results and Impact

Supported by the CGIAR Asian Mega-Deltas Initiative, AgWISE was conducted with 800 respondents in coastal Bangladesh to assess agricultural water insecurity. The study findings have been acknowledged by key policy actors. At a policy workshop conducted in 2024, key representatives from the Department of Women Affairs, Department of Agriculture Extension, Bangladesh Water Development Board, and the Bangladesh Agriculture Research Council endorsed the AgWISE module and expressed interest in its scaling up as a planning, monitoring, and evaluation instrument. In Bangladesh, evidence from the AgWISE module is being presented across multiple forums and policy platforms to inform potential revisions to the National Women Development Policy and to guide the planning and implementation of Gender Responsive Budgeting initiatives. In December 2024, AgWISE results were presented to key water policy and food systems institutions in a workshop hosted by BARC.

The findings show that both women and men experience productive as well as domestic water insecurity challenges. Specifically, 57.5% of women (compared to) 73.7% of men report productive water insecurity experiences, and 29% of men and 42.5% of women experience insecurity of water used at home. The study further shows that experiences of water insecurity are shaped by age, income, and land ownership, with older women, landless households, widows, female-headed families, and Muslim women most affected by lack of reliable access to productive water. Also, beyond crop loss, livestock distress, and reduced dietary diversity, the psychosocial burdens of productive water insecurity are high, with 86% of men and 78% of women reporting stress, anxiety, anger, or harassment in accessing water for productive use. This data provides evidence on the need to tackle the invisibility of women in agrifood system policies, interventions, and innovations. Scaling up AgWISE will benefit 90% of farmers in Bangladesh, who are smallholders, and women make for over 50% of this group.

Scaling up AgWISE benefits farmers by transforming data into evidence-based that shapes targeted policy and fiscal interventions; guides institutional action in extension and irrigation services; and amplifies marginalized voices especially women to gain fairer access to productive water, stronger representation in decision-making, and greater resilience to climate and livelihood risks. AgWISE data can be spatially analyzed to reveal hotspots of agricultural water insecurity, enabling policymakers to design and target interventions and investments toward the most water-stressed and vulnerable farming communities, and to inform gender-responsive budgeting and climate adaptation planning.

The scale for impact of the AgWISE is huge, given that the WISE Scales Impact 2024 report notes that 100+ organizations in more than 55 countries currently use the WISE Scales. Building on the framework and approach of many Gender Equality and Social Inclusion (GESI) tools, AgWISE is among the first of tools to enable assessing water insecurity at the household and individual levels for diverse agrifood systems sectors, including crops, livestock, and fisheries.

Reflection and Learning

Key lessons learned from the co-design and application of AgWISE as well as policy dialogue on the tool's

A woman farmer in northern Bangladesh irrigates her paddy field. Despite their major share of agricultural labor, women's roles in accessing and managing water for productive use often remain invisible in policy and governance.

Photo by Bappy Kumar Mohonto, IRRI

"You will find a homestead garden in every house. Women grow eggplants, chilies, green and red spinach, and what not... but starting from December, the water turns saline, and there's hardly any water in the tube well. Most of the vegetables dry up."

- **38-year-old female farmer**, Khulna district

findings in Bangladesh are that to achieve impact at scale, GESI tools need to be: (i) adaptable to local contexts, (ii) simple to apply and analyze for actors and institutions with little GESI know-how, (iii) be applicable, if not ensuring coordination across relevant agrifood systems and sectors , and (iv) provide data and evidence that can translate to consultative, inclusive planning and policies. AgWISE has been designed for adaptability to local contexts; the questions can be altered to reflect contextual agrifood practices and can ensure coordination across sectors. AgWISE validation processes in local communities helps identify practical steps to identify policy, program challenges, and gaps.

Affordability for Users

AgWISE is designed for use by multiple actors—local implementing authorities as well as local community groups and networks. This adaptable, low-cost, survey-based tool with only 12 questions, requires simple data collection methods. Following the WISE Scale structure and design, AgWISE (household or individual) takes approximately 3 minutes to administer and can be used for recall periods ranging from four weeks to a year. It does not impose time costs on farming households, making it ethical for use for intended end-users.

Financial Sustainability

In Bangladesh, discussions are currently being pursued with the Ministry of Finance and Ministry of Women and Child Affairs to explore the use of the country's Gender Responsive Budget to scale the application of AgWISE across all agrifood system related departments. This would ensure that the innovation is fully financially sustainable and will require no project subsidies.

Temporal & Environmental Sustainability

AgWISE is a diagnostic, survey-based tool; it does not generate negative environmental trade-offs or impacts.

Inclusivity and Responsible Scaling (GenderUp Framework)

Stage 1 & 2: Exploring User Diversity: AgWISE can be applied at the household and individual levels. Combining these methods allows tracking and providing evidence on inter- and intra-household water insecurity. The data and evidence generated can be used to assess gender as well as intersectional dimensions of inequality including age, class, marital

Women and girls collect canal water for farming and household use. With salinity and climate change worsening scarcity, this daily struggle drains time, health, and livelihoods. AgWISE captures these lived experiences to inform inclusive water governance in coastal Bangladesh.

Photo by the Center for Natural Resource Studies

Partners

· Northwestern University, USA
· CGIAR Initiative on Asian Mega-Deltas

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Reliable water sources affect not only agricultural productivity but also health, dignity, and daily life. AgWISE helps measure not just the physical challenges of productive water use, but also the economic impacts, health consequences, and psychosocial burdens. **Photo by** Bappy Kumar Mohonto, IRRI

status, land ownership, poverty, and other social diversity issues such as religion and ethnicity.

Stage 3: Anticipating Differentiated Consequences: AgWISE has no negative consequences or risks for different social groups. This method was designed to visualize women's productive water needs, enable their participation and representation in planning and governance processes, highlight intersectional vulnerabilities, and capture seasonal variations in productive water access and use. These processes are designed to improve water security for marginalized groups.

Stage 4: Mitigating Risks and Embracing Opportunities: AgWISE is adaptable to local contexts to ensure application across diverse agricultural contexts. The data and evidence from AgWISE strengthen water insecurity data, support sustainable, inclusive agrifood practices, and inform climate adaptation strategies that can benefit a wide range of user groups. AgWISE recommends gender-sensitive enumerator training, separate interviews for women and men to reduce gender bias, and robust translation of survey tools in local languages for inclusivity.

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