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LEVERAGING PROJECT INSIGHTS TO STRENGTHEN WEAI FOR CLIMATE RESEARCH

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Key messages

- Measuring women's empowerment in the context of climate change, resilience, and adaptation requires a flexible climate module—not a rigid, universal set of indicators.
- Collective agency, community involvement, and social networks are critical to climate resilience. The project-level Women's Empowerment in Agriculture Index (pro-WEAI) should expand its climate module to better capture these community dynamics and collective actions.
- Integrating qualitative methods strengthens pro-WEAI's effectiveness and ensures the tool is tailored to local contexts, which is essential for collecting meaningful and holistic data.

Introduction

Women's empowerment is essential to addressing climate change challenges, particularly in agricultural and rural communities. The Women's Empowerment in Agriculture Index (WEAI) has been instrumental in measuring women's agency in agriculture, yet its application to climate-related projects remains underexplored. As climate change increasingly threatens agricultural productivity and livelihoods, adapting WEAI to capture the nuances of women's agency, decision-making, and resilience has become urgent.

This synthesis brief examines the application of WEAI in three recent climate research projects across Ethiopia, Kenya, India, and Uzbekistan (Table 1). Each project implemented the project-level WEAI (pro-WEAI), which expands on the original tool by adding indicators and incorporating qualitative methods to better capture empowerment in specific contexts. The brief explores the adaptations made to pro-WEAI, the challenges encountered, and the lessons learned regarding its suitability for climate-related research. By analyzing how these projects integrated contextual elements, this brief aims to highlight key insights for enhancing pro-WEAI's effectiveness in measuring women's empowerment within climate-affected communities. The findings underscore the importance of flexible, context-sensitive approaches in capturing the complex interplay between gender dynamics and climate action.

Credit: Hom Gartaula

Table 1 Project Overview

Project name	Description	Research questions
Unveiling the Nexus: Climate-Smart Irrigation and Women's Empowerment in Uzbekistan Led by the CGIAR Research Initiative on NEXUS Gains	This study aimed to investigate the relationship between gender, energy access, and agriculture in Uzbekistan. Specifically, it examined gender disparities in agriculture and energy, as well as women's empowerment and awareness of climate change. Data and insights from this project will fill an existing gap in gender-disaggregated data and may help to develop equitable climate and agriculture policies, and access to resources and extension services.	• What are the levels and domains of women's empowerment in irrigated areas of Uzbekistan (with a focus on lift-irrigated areas)? • What is the impact of the climate-smart irrigation subsidy on women's and men's empowerment, climate change adaptation and mitigation, food security, and nutrition? • What are constraints to the adoption of the subsidy by large-and small-scale women and men farmers?
Examining women's empowerment and resilience under socio-technical innovation bundling: Application of Pro-WEAI tools and methods in India and Ethiopia Led by the CGIAR Research Initiative on Gender Equality (HER+)	This project aimed to develop and test socio-technical innovation bundles (STIBs) to empower women and strengthen their resilience on food security amid the adverse effects of climate change. The use of learning labs allowed for multistakeholder collaboration, co-learning, and the development of context-specific innovations. This project worked with smallholder farmers in India and Ethiopia and provided both social and technical interventions on women's empowerment, diet diversity, and climate resilience.	• To what extent—and through which combinations—do STIBs contribute to women's empowerment among livestock farmers in India? • How does women's empowerment lead to increased adoption of climate-smart agricultural technologies and build resilience in different socio-ecological contexts? • How effective are pro-WEAI tools and methods in measuring women's empowerment in the context of climate action and resilience building?
Strengthening women's empowerment in the design of a Living Lab approach for climate resilient, low-emission food system development in Kenya and Colombia Led by the CGIAR Research Initiative on Low-Emission Food Systems (Mitigate+)	This project aimed to explore barriers faced by women, as well as opportunities for empowerment and resilience. The project was intended to inform the Mitigate+ Initiative's Living Lab for People (LL4P) approach, which supports locally led innovation, enabling co-creation and -production toward climate resilience and mitigation. The project examined the status of women's empowerment, as well as innovation and resilience capacities, with the goal of building more climate-resilient and equitable agricultural systems in Nandi County, Kenya, and Caqueta, Colombia.	• How can innovative participatory research approaches, such as LL4P, incorporate women's empowerment in their design and contribute toward improving gender equality in the context of climate-resilient and low-emissions food systems development?

COUNTRY-SPECIFIC ADAPTATIONS TO PRO-WEAI

Empowerment must be understood through a localized lens, as it is deeply influenced by cultural and social norms. While the standard pro-WEAI is robust and comprehensive, it does not always translate seamlessly across diverse contexts. The varied impacts of climate change on different communities further compound these translation challenges.

In Uzbekistan and India, project teams developed complementary survey tools alongside pro-WEAI. In Uzbekistan, the Women's Energy Empowerment Score was created to capture energy usage, distinguish dimensions of agency, and explain variations in climate change awareness not addressed by pro-WEAI.

In India, individual and community resilience were measured by project-tailored scores. Individual resilience scores were guided by How to Do: *Measuring Climate Resilience by the International Fund for Agricultural Development* (IFAD 2015). Community resilience scores were guided by the *Disaster Resilience Integrated Framework for Transformation* (DRIFT) (Manyena, Machingura, and O'Keefe 2019).

In Kenya, the project team developed an additional climate change module, which included three submodules on climate shocks, climate change perceptions, and mitigation strategies. A summary of these country-specific adaptations is presented in Table 2.

Table 2 Project-specific Adaptations to Pro-WEAI

Project	Adaptations	Rationale
India	Removed questions deemed culturally insensitive from the intimate partner violence (IPV) module	Ensures culture appropriateness
	Added questions on the five resilience capacities (preventive, anticipative, absorptive, adaptive, and transformative)	Incorporates the project's climate learning component
	Only collected responses from women during the quantitative survey; collected data from men through focus group discussions	Focuses on women, because men were not involved in agricultural practices being studied
Ethiopia	Added question on self-perceptions of resilience	Improves measurement of actual levels of resilience, for which self-perception is critical
	Added questions on decision-making during climate shocks (such as, "how do male and female household members respond to shocks?")	Helps understand gendered responses to climate shocks
	Expanded group membership question to include extent of participation	Ensures participation is measured beyond mere membership
Kenya	Expanded question on horticultural farming to include tea farming	Reflects local agricultural environment
	Expanded land ownership question to capture how the respondent acquired the land (rented, inherited, etc.)	Improves understanding of access to land and security of tenure
	Added questions to the time allocation module on access to and usage of childcare facilities	Helps understand secondary or domestic tasks and time management
	Added module on life satisfaction	Helps understand people's level of life satisfaction
	Added module on climate change that included submodules on climate shocks, climate change perceptions, and mitigation strategies	Addresses climate change perceptions, mitigation strategies, or climate shocks, which pro-WEAI did not adequately do

Project	Adaptations	Rationale
Uzbeki-stan	Removed the IPV module	Ensures survey acceptability and avoids respondent discomfort
	Utilized the Women's Energy Empowerment Score to generate indicators of agency related to energy use	Addresses a critical gap around energy access, decision-making, and use that was not fully captured in pro-WEAI

*Colombia did not collect pro-WEAI survey data.

WHAT PRO-WEAI DOES NOT MEASURE

Collective action

Group participation is critical in building climate resilience. Pro-WEAI is based on 10 indicators that correspond to three domains: intrinsic agency ("power within"), instrumental agency ("power to"), and collective agency ("power with"). However, the project teams found that pro-WEAI does not adequately capture collective agency. It only asks whether a respondent is part of a group but does not assess their level of participation or influence in a group. The India project highlights that simply being a part of a group does not alone reflect meaningful participation or the benefits derived from such membership. Similarly, the Kenya project emphasizes that resilience is rarely an individual effort but instead is a communal one. The researchers also note that groups are critical for accessing credit, agricultural inputs, and information, yet pro-WEAI does not adequately capture these dynamics.

Land ownership

Land ownership is often considered an important indicator of empowerment across many contexts (Meinzen-Dick et al. 2019). Pro-WEAI does not account for different sources of land access, such as renting—common in post-Soviet Uzbekistan—or government-leased land systems, as seen in Ethiopia. In this context, formal ownership matters less than secure access to land for productive use. By failing to capture different sources of access to land, pro-WEAI risks underestimating women's empowerment along this indicator. Expanding pro-WEAI's land indicators to include informal tenure arrangements would provide a more accurate reflection of women's empowerment status. The "secure property rights" indicator provides one example of how this gap could be addressed. Developed by the Women's Economic Metric for National Statistical Systems (WEMNS), the indicator measures perceived security over land use and rights, regardless of formal ownership (IFPRI et al. 2024). Adapting similar measures within pro-WEAI would strengthen its relevance for climate research and diverse land tenure systems.

Resources

Pro-WEAI measures women's empowerment by focusing on their agency in key domains. By design, it is intended to be used alongside other data collection tools to provide a more holistic view of empowerment. Feedback from the three projects emphasized that access to resources is critical for enabling women to exercise their agency. Collecting complementary data on resource access provides important context for interpreting pro-WEAI findings. Important climate resources for agriculture include technologies such as climate-resilient crop varieties, financial resources, water management, and community networks, which all have the potential to increase climate resilience.

Access to information

Women's ability to adapt to climate change depends on access to timely, accurate information. However, pro-WEAI does not capture women's access to extension services or other critical sources of climate-related information, such as digital platforms or radio. Research from the Uzbekistan project underscores that access to advisory services is crucial for informed decision-making, yet this dimension is missing from pro-WEAI. The Kenya project also found a link between information access and group membership: women often shared knowledge gained from extension agents, demonstration sites, or agricultural shows during group meetings. Additionally, rural women often have constrained access to information because their social networks—the primary channels for learning—tend to include other women who are also information-poor (Bryan et al. 2024).

Capacity to adapt to climate change

Pro-WEAI does not adequately capture women's capacity to innovate or to adapt, anticipate, and transform in response to climate change. It also does not assess what measures women have already taken to adapt. Innovation plays a critical role in resilience, making it an important aspect that should be measured.

Agency over use of time

Pro-WEAI does not currently capture agency over use of time. More time spent on work alone is not necessarily an indicator

of greater or lesser empowerment. Instead, in climate-related projects, empowerment should be measured by a woman's ability to decide how she allocates her time, particularly in areas such as climate adaptation, resource management, and responses to climate impacts.

These recurring issues highlight areas where adaptations and additional support could strengthen pro-WEAI implementation. Box 1 summarizes the most common challenges encountered by the projects and outlines proposed best practices.

BOX 1 Common Challenges in Pro-WEAI Implementation and Best Practice Solutions

Researchers encountered several challenges in implementing pro-WEAI; these are not unique to climate-related projects but are nonetheless illuminating for research projects in general. These recurring issues highlight areas where adaptations and additional support could strengthen pro-WEAI implementation.

Translation of concepts across cultural contexts

One major challenge in adapting pro-WEAI involves translating key concepts across different cultural contexts. Mukhopadhyay and colleagues (2024) emphasize that the translation of the questionnaire must preserve the underlying meaning of complex ideas such as "empowerment," not just translate the words. The Ethiopia research team also highlighted the difficulty of aligning such terms with the local language and cultural understanding. Additionally, pro-WEAI imposes a standardized definition of empowerment, which may not reflect how empowerment is experienced in different communities. Incorporating qualitative methods can help researchers better understand cultural contexts and adapt survey questions to ensure they capture locally meaningful interpretations of empowerment.

Survey length and respondent fatigue

The length of pro-WEAI was a major challenge across projects. Researchers from India found that unless pro-WEAI was the sole data collection tool, its integration created an excessive burden on both respondents and data collectors, leading to survey fatigue. Asking women—who already face significant time poverty—to complete an hours-long survey proved difficult. Farmers also struggled to accurately recall detailed time-use data. In Kenya, the time spent by one woman on the survey even resulted in null interviews when her husband was no longer willing to complete the survey (Mwambi, Nchanji, and Lutomia 2024). Collecting the data over multiple visits is one solution that would offer twofold benefits: a more manageable survey and more opportunities to build rapport.

Underestimation of enumerator training needs

High-quality data collection with pro-WEAI tools requires adequate training that is often lacking. Pro-WEAI is highly structured, yet limited training capacity exists for enumerators. While online resources are available, the India research team emphasized the primary issue is data quality and discrepancies that arise from inadequately trained enumerators. This issue is especially pertinent in remote areas where pro-WEAI surveys are administered for the first time. Comprehensive training—preferably conducted in person—that covers gender-sensitive interviewing techniques is critical to ensuring reliable and consistent data.

Importance of qualitative research to complement pro-WEAI

Qualitative research provides essential context for interpreting pro-WEAI findings. It helps clarify cultural norms, definitions of empowerment and resilience, and the community dynamics that shape women's agency. Early qualitative work also strengthens trust between researchers and participants, leading to richer, more accurate data. The Kenya and India projects emphasized the value of completing qualitative research before quantitative surveys: this allows for better targeting of key indicators and ensures that pro-WEAI data collection reflects local realities.

UNIQUE INSIGHTS AND LESSONS LEARNED

Understanding women's empowerment in the context of climate adaptation requires attention to household dimensions, social dynamics, and local perceptions. The following insights highlight key lessons from the projects.

Collaborative and household-level strategies

Household dynamics play a decisive role in shaping women's

empowerment and their ability to leverage newly acquired skills. Research from both India and Kenya shows that interventions focused solely on women have the potential to disrupt gender dynamics. In India, women often lack the decision-making power within their households to apply what they learn through empowerment initiatives. Without engaging male household members, women's agency remains limited in practice. Male resistance or perceptions of exclusion may undermine the intended outcomes of such programs.

To address these challenges, research teams emphasized the need for a more inclusive, household-level implementation approach. The Kenya project proposed a couples-based survey strategy to foster joint decision-making and align household priorities. However, an obvious trade-off to such an approach is the lack of sex-disaggregated data that are critical to pro-WEAI. One potential solution would be a hybrid model: couples could jointly complete climate-related and other select modules to capture household-level dynamics, followed by individual interviews to preserve sex-disaggregated data.

Community involvement and group membership

All three projects emphasized the importance of social networks and group membership in building climate resilience. Stronger community ties can enhance individuals' access to resources and recovery strategies during climate shocks. Group membership, a dimension captured by pro-WEAI, could be explored in greater detail. Some respondents may not consider themselves to be part of a formal group, but they may still leverage strong relationships within their communities. These relationships can increase the accessibility and mobilization of resources when climate shocks occur. In Kenya, women share financial resources through informal savings and credit groups, and in Uzbekistan, certain tools are co-owned within the community, but neither is captured in pro-WEAI. In both cases, group membership enables women to have greater access to key information and sharing of resources, and thereby builds their resilience.

When communities are involved in climate adaptation and resilience strategies, they can be more engaged, make more impactful decisions, and develop long-term solutions. It is important to capture this level of action to fully understand climate resilience.

Insights from resilience and adaptation strategies

All three projects aimed to understand perceptions of climate change by exploring the frequency of climate shocks, but they found that examining how individuals and communities responded to shocks offered more revealing insights. Adaptation strategies—such as shifting agricultural practices, accessing new technologies, or relying on community support—offered deeper insights into resilience capacity than merely recording the occurrence or severity of shocks.

RECOMMENDATIONS: ENHANCING PRO-WEAI FOR CLIMATE-RESILIENT WOMEN'S EMPOWERMENT

To make pro-WEAI more effective in climate-related projects, the following recommendations should be considered:

1. **Develop a flexible climate dashboard approach using submodules**

   While each project tailored surveys to their specific contexts, there was notable overlap in key themes, including weather observations, perceptions of climate change, and mitigation strategies. The Kenya project's development of a climate module with submodules proved an effective model.

   A flexible dashboard could include submodules on, for example, climate shocks, adaptation strategies, mitigation strategies, perceptions of climate change, community engagement, and behavior change. This modular approach would allow projects to select the indicators most relevant to their objectives while maintaining comparability across contexts.

2. **Incorporate questions on access to information and women's capacity to act on it**

   Access to timely and reliable climate information is crucial for adaptation. A future climate add-on to pro-WEAI should include questions on women's access to agricultural extension services. Just as critically, it should assess whether women have the autonomy and agency to act on this information.

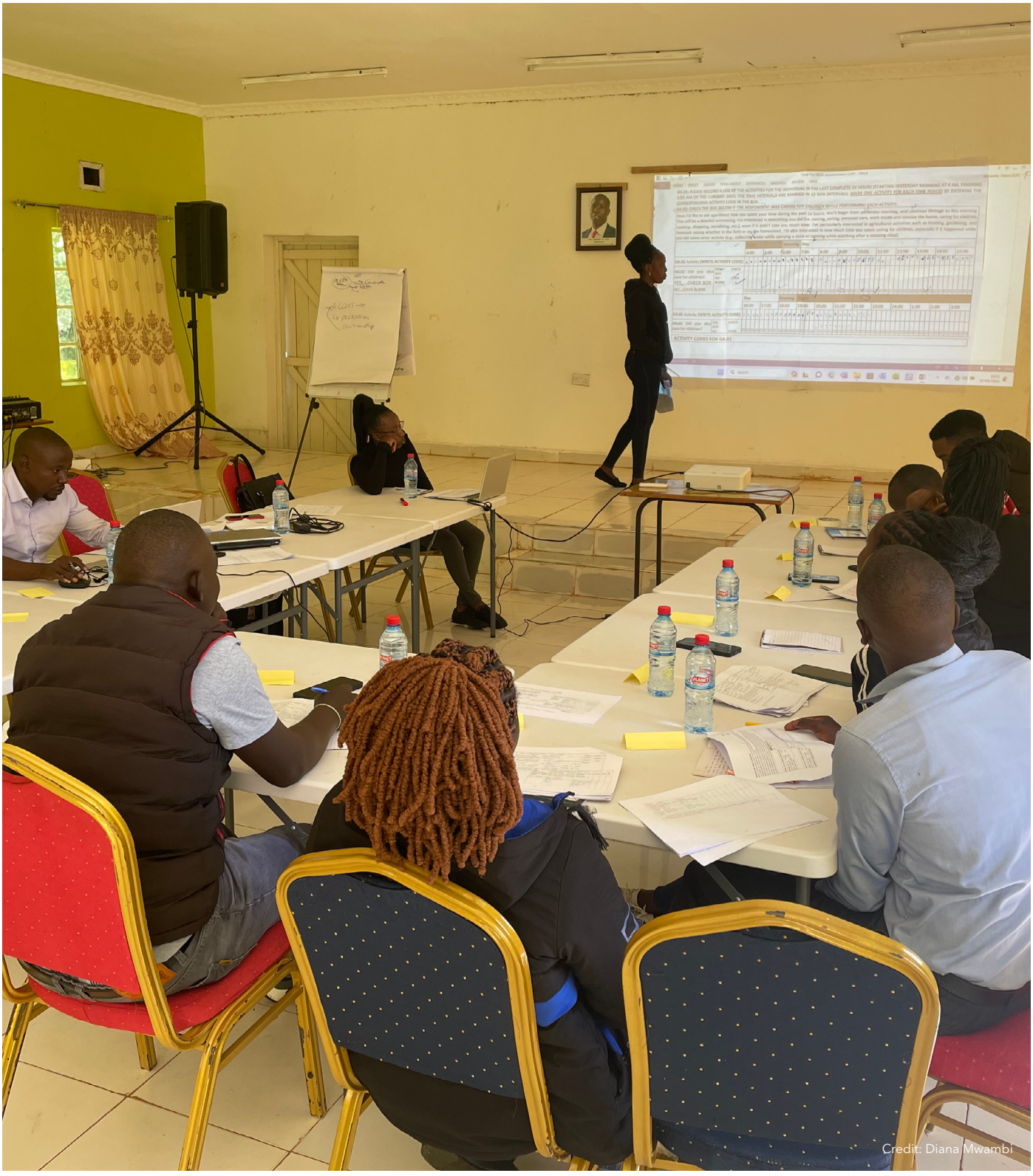
3. **Improve measurement of collective agency**

   Collective action plays a critical role in climate adaptation, yet the current pro-WEAI only captures membership, not participation depth. A more nuanced set of indicators should evaluate the extent of women's involvement in decision-making within groups, their leadership roles, and the effectiveness of these networks in engendering climate resilience. A stronger collective agency indicator would better reflect the role of social capital in fostering climate resilience.

4. **Incorporate questions and indicators that capture collaborative and household-level implementation strategies**

   Household dynamics significantly influence women's empowerment outcomes, and interventions that focus solely on individual women risk exacerbating existing tensions within the household. Several projects highlighted the value of integrating couples-based, household-level strategies to

foster joint decision-making and reduce the risk of backlash from men. This approach creates space for more equitable participation in decisions around climate resilience and livelihood strategies. To better capture these aspects, the climate add-on to pro-WEAI could incorporate questions and indicators around household-level decision-making and the role of couples in climate resilience activities.



Credit: Diana Mwambi

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