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Lessons on methodologies to assess women's empowerment from two agricultural and livestock project portfolios

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COVER PHOTO: Water point in Lhate village, Mozambique. Photo credit: CGIAR

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Abstract

To assess broader trends and impacts on women's empowerment through agricultural development interventions, there is a need to compare projects and their impacts. This paper is based on the experiences of the Cultivate Africa's Future (CultiAF) and the Livestock Vaccine Innovation Fund (LVIF) project portfolios implemented in African and Asian countries. We draw lessons from the constraints and opportunities of using standardized tools for measuring women's empowerment, such as the project-level Women's Empowerment in Agriculture Index (pro-WEAI) and the Women's Empowerment in Livestock Index (WELI) tools. We also make recommendations for the improvement of these tools and their use.

We conclude that, while these tools measure individual and household-level empowerment, complementary methods are needed to capture broader societal changes. The length of the tools has resulted in concerns about respondent fatigue, but balancing the need for comprehensive data with respondent burden is important. Streamlined versions of the pro-WEAI and the WELI could be useful for projects not primarily focused on empowerment. Proper interpretation of empowerment data is emphasized in this paper, with comparisons across time, gender and projects identified as being key to meaningful insights. The paper also underscores the importance of consistent measurement to ensure valid results.

These learnings can inform improvement of the tools to better identify the best approaches to support women's empowerment in agriculture and livestock. The learnings will also be useful for development and research organizations implementing portfolios of projects with women's empowerment objectives and for developers of pro-WEAI tools, WELI tools and similar tools for measuring women's empowerment.

Keywords: *agriculture, gender, livestock, women, women's empowerment*

1. Introduction

Agricultural development programs in low- and middle-income countries (LMICs) increasingly aim to support women’s empowerment to drive tangible progress and align with the Sustainable Development Goals (SDGs) (Malapit et al. 2019). To understand what makes a program effective in fulfilling its empowerment objectives, all dimensions of women’s empowerment need to be measured and compared with men’s empowerment (Quisumbing et al. 2024). Assessing broader trends and impacts on women’s empowerment through agricultural development interventions requires a comparative approach across various projects. However, achieving consistent and comparable measurements across projects depends on standardized and context-sensitive frameworks and tools applied uniformly across diverse projects. Standardized tools are particularly important for tracking progress over time and across different regions or intervention types (Baltenweck et al. 2024; Njiru et al. 2024). Tools like the project-level Women’s Empowerment in Agriculture Index (pro-WEAI) and the Women’s Empowerment in Livestock Index (WELI) provide a structured framework for evaluating multiple dimensions of empowerment, along with tested indicators such as decision-making power, access to resources, workload, leadership and more (Alkire et al. 2013; Galiè et al. 2019) (See [Box 1](#) and [Box 2](#) for a description of the pro-WEAI and WELI tools).

For a systematic assessment of changes in empowerment associated with agriculture and livestock interventions, Canada’s International Development Research Centre (IDRC) promoted the use of the project-level WEAI (pro-WEAI) and WELI tools in the Cultivate Africa’s Future (CultiAF) and Livestock Vaccine Innovation Fund (LVIF) project portfolios, respectively. In Galiè et al. (2024), we discussed how the CultiAF and LVIF programs impacted women’s empowerment. In this paper, we identify the constraints faced by the CultiAF and LVIF project teams when implementing these tools and discuss opportunities for the developers of the pro-WEAI and WELI to improve their use. Improved tools can better support development projects to identify the best approaches to support women’s empowerment in agriculture and livestock. The discussion focuses on how organizations implementing projects with women’s empowerment objectives can implement both tools for a meaningful comparison of results.

2. Prior evidence of measuring women’s empowerment

Prior evidence of using harmonized tools for measuring women’s empowerment at a synthesized portfolio-level is limited. The WEAI tools have been used to synthesize project impacts for two portfolios that have explicit women’s empowerment objectives. Quisumbing et al. (2024) synthesized the findings of 11 mixed-methods impact evaluations of agricultural development projects that were part of the Gender, Agriculture and Assets Project, Phase 2 (GAAP2) using pro-WEAI to measure women’s empowerment. The qualitative and quantitative data collected by the GAAP2 project were used to validate the pro-WEAI suite of tools, which was specifically designed to measure and provide insights into the impact of interventions on women’s empowerment in agricultural settings (Malapit et al. 2019). In another paper, Quisumbing et al. (2023) synthesized the empowerment impacts of a multi-country joint program “Accelerating Progress towards the Economic Empowerment of Rural Women”

(UN JP RWEE) using the abbreviated WEAI (A-WEAI). In JPRWEE, the four country programs in the synthesis used different tools: three countries used pro-WEAI and one country used the reduced WEAI (R-WEAI; Garbero & Perge 2017), an International Fund for Agricultural Development (IFAD) adaptation of the original WEAI tool. To compare empowerment impacts across the JPRWEE portfolio, the analysis used the six A-WEAI indicators that are nested within the R-WEAI, and the pro-WEAI.

A recent scoping review by Baltenweck et al. (2024) assesses the changes in women's empowerment associated with livestock interventions. However, the reviewed studies lacked consistent measures of empowerment, which made it difficult for the authors to do a meta-analysis of the findings. To our knowledge, Galiè et al. (2024), the companion to this paper that documents how CultiAF and LVIF programs impacted women's empowerment, is the only study doing a meta-analysis of projects that have used WEAI as a harmonized tool for measuring the impact of livestock projects on women's empowerment.

Several challenges in using harmonized tools for measuring women's empowerment emerged from the evaluation of project portfolios. These challenges highlight the complexities of measuring and assessing empowerment across diverse contexts and projects.

Key challenges lie in balancing the use of harmonized, standardized tools and creating contextual relevance through adaptations for accommodating different cultural, social and economic contexts. Also, the multidimensional, evolving and culturally nuanced nature of empowerment presents significant measurement challenges. In Nepal, for instance, increased male participation in domestic work, based on the number of hours worked, was interpreted both as a positive empowerment shift and an increased burden. Differences in cultural and socio-political contexts and in baseline empowerment levels across projects (likely linked to the contextual differences) were found to pose challenges for comparison (Quisumbing et al. 2023). Furthermore, to represent diverse groups of women accurately, accounting for the intersectionality of gender with other social identities like class, ethnicity and age remains challenging (Cislaghi and Heise 2018).

Other challenges include the inconsistency across projects in design, strategies and project implementation, which complicates assessing the overall impact of programs in different countries (Quisumbing et al. 2023). Inconsistency in data collection is another challenge. For instance, not all projects collected data using the same WEAI version or collected data on all (pro-) WEAI indicators. Some projects do not include data on men, and some projects have small sample sizes. This hinders the ability to investigate empowerment impacts across projects (Quisumbing et al. 2024). It also restricts the scope and robustness of synthesized, quantitative analyses of empowerment impacts, and restricts a comparison of impacts for both women and men. While mixed methods are recommended to capture both the breadth and depth of empowerment (Baltenweck et al. 2024; Njiru et al. 2023), the variability and inconsistency in qualitative data collection complicates a uniform evaluation of empowerment-related outcomes across projects (Quisumbing et al. 2024).

The synthesis evaluations by Quisumbing et al. (2023) and Quisumbing et al. (2024) concluded that comprehensive tools like pro-WEAI can capture the full range of empowerment impacts, with careful consideration of cultural nuances when interpreting empowerment. Standardizing data collection was found to be essential to ensure consistent and comparable empowerment assessments across projects. Yet, contextual variations should also be accounted for, and methods adapted where standardization is not feasible. A better alignment of qualitative and quantitative methods is important as qualitative findings give valuable insights into the aspects of empowerment most significant to participants and can reveal the interconnections between these aspects, enhancing a nuanced understanding of empowerment impacts. Finally, the studies pointed out that sample sizes must be sufficient to establish robust links between project strategies and empowerment outcomes.

3. Context: The projects in the CultiAF and LVIF portfolios

This paper draws on the experience of eight projects in the CultiAF portfolio and four projects in the LVIF portfolio, described in detail in Galiè et al. (2024) (Appendix 1 [Table 3](#) and the Online Supplementary Materials).

Eight CultiAF projects were funded by IDRC in partnership with the Australian Centre for International Agricultural Research (ACIAR). These projects focused on crop and fisheries systems in seven East and Southern African countries. The projects used the pro-WEAI to assess their impact on women’s empowerment, working in Ethiopia, Kenya, Malawi, Mozambique, Uganda, Zambia and Zimbabwe.

Table 1. CultiAF projects that used the pro-WEAI to assess impact on women’s empowerment

| Short name | Full project name | Description | Tool used |
|-------------------|---|---|---|
| ACRE Africa-KALRO | Improving agricultural productivity and resilience with satellite and cellphone imagery to scale climate-smart crop insurance | Aimed to boost insurance demand by reducing basis risk through developing and implementing a picture-based insurance product | Quantitative pro-WEAI, but did not collect qualitative data |
| FASIMO | Farmer-led smallholder irrigation in Mozambique | Worked to improve small-scale irrigation schemes through user-driven approaches | Quantitative pro-WEAI Qualitative pro-WEAI |
| Fisheries | Investigating the impact of gender transformative approach on women empowerment in the small-scale fisheries value chain in Malawi | Used a Trainer of Trainers model, where gender champions were equipped with gender-transformative approaches to empower women in the fish value chain in Malawi | Pro-WEAI quantitative tool, but developed their own qualitative tool based on the quantitative tool |
| INSFEED 2 | Insect feed for poultry, fish and pig production in Kenya and Uganda — Phase 2 | Introduced business models for rearing black soldier flies for animal feed that are more accessible to women and young farmers | Pro-WEAI quantitative tool and their own qualitative tool |
| IPM Mango | Alien invasive fruit flies in Southern Africa: Implementation of a sustainable integrated pest management (IPM) program to combat their menaces | Promoted the adoption of integrated pest management to mitigate the risk of fruit-fly infestation in mango production | Quantitative pro-WEAI Qualitative tool that included elements of pro-WEAI |

| Short name | Full project name | Description | Tool used |
|------------------|---|---|--|
| NutriFish | Harnessing dietary nutrients of under-utilized fish and fish processing by-products to reduce micronutrient deficiencies among vulnerable groups in Uganda | Aimed to reduce of micronutrient deficiency among women of reproductive age and children under five years of age by promoting the consumption of underutilized small fishes | Quantitative pro-WEAI tool Qualitative pro-WEAI tool |
| Pre-cooked beans | Scale-up supply and utilization of precooked beans for food and nutrition security, incomes and environmental conservation by leveraging on public-private partnerships in Kenya and Uganda | Aimed to increase productivity, income, and nutrition, focusing on the value chain for precooked bean products | Quantitative pro-WEAI tool Qualitative pro-WEAI tool |
| Sorghum | Climate-smart sorghum interventions for smallholder farmers in Ethiopia | Worked on developing sorghum markets and value chains in Ethiopia, specifically focusing on closing the gender gap in productivity | Aimed to use both the quantitative and qualitative pro-WEAI tools; however, they were unable to collect qualitative data due to security concerns in the target area |

Four LVIF projects across six countries (Kenya, Ghana, Nepal, Senegal, Uganda and Rwanda) were funded in 2019 in a unique partnership between IDRC, the Bill & Melinda Gates Foundation and Global Affairs Canada to support cutting-edge research that informs livestock policies and animal-vaccine delivery systems in LMICs. Collectively, these projects aimed to strengthen the evidence base on the barriers rural women in LMICs face in accessing and using livestock vaccine systems and approaches to support their empowerment and access. All four LVIF projects focused on small ruminants and poultry; each aimed to improve women’s empowerment; and all used a mix of qualitative and quantitative research methods to test different approaches to transforming livestock vaccine systems to better reach women and support their empowerment (McKune et al. 2023; 2021; Njiru et al. 2024; Ogolla et al. 2022; Omondi et al. 2022).

Each LVIF project adopted a different approach to achieving the shared goals of women’s empowerment and gender-responsive animal vaccine systems.

Table 2. LVIF projects that used the WELI to assess impact on women's empowerment

| Short project name | Full project name | Description | Tool used |
|--------------------|---|---|---------------------------------------|
| GIVE | Gender-inclusive vaccine ecosystem | This project tested and compared two vaccine delivery models in Kenya: a demand-driven model, and a community vaccinator driven model. Both involved working with men and women cooperatives/groups to leverage the power of collectives in access to resources and markets | Quantitative WELI Qualitative WELI |
| SheVax+ | Hearing their voices: Action research to support women's agency and empowerment in livestock vaccine distribution, delivery and use | This project was implemented in Kenya, Rwanda and Uganda. It aimed to both empower women and identify livestock vaccines delivery models by testing a push, women centered private sector delivery model, and a pull, demand-centred model. | Quantitative WELI Qualitative WELI |
| Advance | Advancing women's participation in livestock vaccine value chain | The project was carried out in Nepal, Senegal, and Uganda. It implemented gender and intersectional transformative approaches to increase women's participation in livestock-vaccine value chains. | Quantitative WELI Qualitative WELI |
| Women Rear | Transforming the vaccine delivery system in Ghana: Identifying approaches that benefit women | The project aimed to assess the effectiveness of a gender-accommodative and a gender transformative approach in enhancing the access of farm women to animal vaccines, and their empowerment. | Quantitative WELI Qualitative WELI |

All LVIF projects quantitatively measured changes in women's empowerment using the Women's Empowerment in Livestock Index (WELI). But each project also adopted a variety of qualitative methods to provide in-depth evidence on the processes of change experienced by participants. All projects used semi-structured interviews to guide focus group discussions, as well as individual and key informant interviews. Other methods included outcome mapping, photovoice, participatory observation and experiential learning (McKune et al. 2023).

4. Methods

Box 1: The pro-WEAI tool

The pro-WEAI is a standardized and internationally validated tool for measuring women's empowerment in various types of agricultural development projects. The pro-WEAI was tested and co-developed by 13 agricultural development projects in Bangladesh, Burkina Faso, Ethiopia, Ghana, India, Kenya, Mali, Nepal and Tanzania as part of the GAAP2 (Malapit et al. 2019). The pro-WEAI tool includes both a standardized survey questionnaire and qualitative protocols (Meinzen-Dick et al. 2019) to add nuance to the quantitative results. The qualitative protocol captures local, gendered meanings of empowerment, which can help shape the empowerment intervention and be used when implementing the quantitative survey. When implemented after the quantitative protocol, the qualitative protocol aims to clarify the "hows and whys" of specific results that may need a deeper understanding. Although the qualitative protocol is primarily designed for measuring the empowerment impact of agricultural development interventions within a project, pro-WEAI tools can also be used as a diagnostic to identify the most important areas that programs should address.

The pro-WEAI is made up of 10 indicators that measure three types of agency: intrinsic agency (power within), instrumental agency (power to), and collective agency (power with):

- Intrinsic agency
 - autonomy in income
 - self-efficacy
 - attitudes about intimate partner violence against women
- Instrumental agency
 - input in productive decisions
 - ownership of land and other assets
 - access to and decisions on financial services
 - control over use of income
 - work balance
 - visiting important locations
- Collective agency
 - group membership.

Box 2: The WELI tool

The WELI tool is a standardized and internationally validated tool for measuring women's empowerment in settings where livestock farming is the dominant livelihood.

The WELI was co-developed by livestock and gender scientists from the ILRI and Emory University in 2014/2015. While the WELI and pro-WEAI were originally distinct tools, in 2019 ILRI and the International Food Policy Research Institute (IFPRI) worked together to align the two tools. The WELI was then curated to a medium-sized tool and a short-sized tool through a systematic process using correlation, simulation of existing data for comparison with the shortened forms, a sensitivity analysis and field validations. Qualitative evidence also contributed to the process by highlighting the value of indicators in local contexts. For example, a module on access to credit, which seemed redundant based on results from a Tanzanian study, was kept in the tool because qualitative evidence showed that access to credit was critical for women livestock keepers and was also likely to soon become available in the area. The WELI has been implemented in various projects around the world including Benin, Burkina Faso, Burundi, DRC Congo, Ethiopia, Georgia, Ghana, India, Kenya, Nepal, Rwanda, Senegal, Tanzania, Uganda and Viet Nam.

The WELI has a qualitative and a quantitative component. The qualitative component aims to explore local and gendered meanings of empowerment around livestock farming, and to understand how processes of change in empowerment are experienced by respondents. The value of the qualitative component of the WELI varies between baseline and endline. When used at baseline, before the quantitative survey, the qualitative component provides locally appropriate language and examples that can be used to make the quantitative survey more contextually friendly. When used at endline after the quantitative survey, the qualitative study can help validate the quantitative results, and also explain the "hows and whys" of change (or lack of) as experienced by the respondents (Njiru et al. 2024).

The quantitative part of the WELI is made up of 13 indicators that measure three types of agency: intrinsic, instrumental, and collective agencies. All 10 pro-WEAI indicators are included as WELI indicators with adjustments to some of the indicators such as autonomy in income, attitudes about intimate partner violence against women, and visiting important locations. The adjustments include additional or updated scenarios or other options for livestock. In addition to the 10 indicators, the other three indicators include an additional module on input in household decisions with a livestock focus and two indicators that were originally part of the pro-WEAI pilot, i.e., respect among household members and membership in influential groups.

5. Data

5.1 Data collection

The evidence reported in this paper on users' experiences with implementing the pro-WEAI and WELI in LVIF and CultiAF projects was produced from four sources:

- i. templates filled in by the project team
- ii. direct observation of how projects implemented the tools
- iii. our own implementation of the tools
- iv. assessment of the results produced by the tools

Templates. At the start of the CultiAF and LVIF projects, IDRC engaged with the authors of this paper and creators of both the pro-WEAI and WELI tools to support the projects with implementation. The LVIF projects received WELI support from ILRI's gender team; the CultiAF projects received support from the pro-WEAI helpdesk team at IFPRI. As part of this support, the authors developed a template to capture the team's experiences with the tools. The templates were submitted by the project teams as part of their annual reporting to IDRC.

Direct observation. As part of the support to project teams, the authors directly observed the project teams implementing the tool to help solve any problems with the tool throughout the project life.

Own implementation. The authors who are part of the ILRI gender team, were also LVIF grantees as part of the Women Rear project. Therefore, some authors were also implementors of the WELI as part of that project in Ghana.

5.2 Assessment of the data

The IDRC engaged a team to assess the effectiveness of the CultiAF and LVIF projects in impacting women's empowerment (Galiè et al. 2024). This assessment used the WELI and pro-WEAI results from the projects. A meta-analysis of empowerment outcomes across all projects identified some shortcomings, either in the tools themselves or in their implementation, which affected the clarity and usefulness of the results.

5.3 Analysis of data

The four data collection sources allowed four main issues with the tools to emerge: (1) ability to capture transformative change, (2) ability to ask sensitive questions, (3) relevance of the modules, and (4) length of the tool. While other issues also emerged, we organized our findings based on these four issues.

Three challenges were identified for each key issue: (1) "topic challenges", related to the subject matter the tool aims to cover; (2) "operational challenges" related to practical difficulties in implementing the tool, such as local or institutional context and logistical constraints; and (3) "research challenges" from conducting research, regardless of the tool used. Some challenges overlap between topical and operational categories, emphasizing their interconnectedness. Additionally, we highlight the elements that contributed to the successful use of the tools.

We analyzed the four sources of data for the CultiAF and LVIF projects separately, categorizing our findings by the issues and types of challenges. Subsequently, we reflected on commonalities and differences between the findings from the CultiAF and LVIF projects. We then identified key learnings and recommendations, which we elaborate on in the discussion section.

6. Results

6.1 The Pro-WEAI implemented in the CultiAF project portfolio

Topic challenges: The *Sorghum* project reported difficulties in collecting data for the intra-household relationships module, which was found to be ambiguous. The project also had difficulties collecting data for the time allocation module, which is affected by “outlier days,” such as a day spent at the hospital. This module was also reported as being tedious to collect for both the enumerators and respondents. The *INSFEED* project also reported that the pro-WEAI survey contains nuanced concepts, which enumerators often found difficult to explain to respondents, citing the self-efficacy module in particular as difficult to implement.

Operational challenges: Many CultiAF projects referenced the length of the pro-WEAI survey as a challenge. According to the *Nutrifish* project, and echoed in a comment by the *INSFEED* project, administering the quantitative questionnaire was challenging because many of the respondents were balancing their participation with other pressing responsibilities.

Research challenges: Some projects reported issues related to study design. The *Nutrifish* project reported that enumerators often did not speak the local language and had to rely on local translators for both the quantitative and qualitative tools. In their quantitative survey, the *Fisheries* project reported a high rate of respondent attrition. The *ACRE Africa-KALRO* project reported that mitigating respondent attrition depended heavily on a monetary incentive, and the incentive used in early rounds of data collection was considered insufficient by most respondents. The *IPM Mango* project reported infrastructural challenges, such as poor roads during rain for accessing respondents and poor network connectivity for administering the survey. The project also reported logistical challenges, such as difficulties in making appointments with households when both the primary and secondary respondents would both be at home, and working around burials and religious meetings. The *Precooked beans* project also referenced difficulties making appointments because their survey was implemented during planting season. Meeting the respondents at home often required re-visiting. The *Nutrifish* project obtained support from local communities and leaders who helped the project by mobilizing households for surveys. The *Sorghum* project could not implement the qualitative pro-WEAI tool due to security concerns in the target region.

Projects also reported issues related to the social sensitivity of the study as a whole, along with the social sensitivity of individual modules. In some countries, the *ACRE Africa-KALRO* project reported that female primary respondents had difficulty approaching male secondary respondents to inform them about the study, out of fear of or respect for the male respondent. They also reported that some respondents would not share the phone number of their spouse with whom they had a domestic dispute, making it impossible to interview these secondary respondents. Respondents who were not allowed to use the phone, were similarly not interviewed. Almost all projects highlighted the importance of matching respondents to enumerators of the same gender, conducting individual interviews privately and ensuring that enumerator dress code is compatible with the local culture.

Projects also relayed several challenges related to the ways COVID-19 affected the study environment. The *Precooked beans* project reported difficulty collecting qualitative data on topics like livelihoods and empowerment because the dominant concern among participants was obtaining COVID-19-related support. The *Precooked beans* project reported delays in data collection caused by COVID-19, which resulted in the researchers having insufficient time to analyze the data.

In dealing with challenges related to the length of the tool, several projects opted to shorten it. The *Nutrifish* and *ACRE Africa-KALRO* projects both omitted some quantitative modules in the endline survey. The *Fisheries* project addressed the challenge of survey length by equipping research assistants with methods to keep respondents engaged throughout the process. Some projects also shortened the survey to deal with issues related to sensitivity. In their midline phone survey, the *ACRE Africa-KALRO* project successfully dealt with survey length by giving respondents the option to resume the survey at a more favorable time, if they requested to stop. Similarly, the *INSFEED* project implemented household and individual interviews on different days, as much as the project budget allowed. The *FASIMO* project removed questions about domestic violence from the quantitative survey, giving an insight that a woman who reports experiencing domestic violence may be perceived by her mother-in-law as unsuitable for her son. In dealing with study logistics, the *ACRE Africa-KALRO* project solved their participant retention issue by increasing the financial incentive for the endline survey. They also mitigated the issue of women approaching men about the study by designating male champion farmers who were able to spread awareness of the survey. The projects that were the most successful in dealing with issues, such as cultural sensitivities, language barriers and explaining complicated concepts, were those with the most rigorous enumerator training programs, which also sometimes included pre-testing the survey modules in the field. For example, the *ACRE Africa-KALRO* project highlighted the importance of maintaining a database of culturally diverse enumerators with experience in gender data collection to best navigate local languages and sensitivities.

Other challenges conveyed by project teams to the pro-WEAI helpdesk team in one-on-one meetings were related to the unbudgeted resources required to implement the pro-WEAI tools. Project proposals were approved prior to the adoption of the pro-WEAI for CultIAF, requiring reallocation of already tight budgets, which may have contributed to the limited time spent in enumerator training and field testing of instruments. As project teams were under pressure to deliver their programs on time, communication with the pro-WEAI helpdesk team became less of a priority. The demand for helpdesk support was lower than expected, and many teams did not reach out for support in the early stages of their data collection activities. In several cases, project teams were unable to attend scheduled check-in calls with the helpdesk team.

6.2 *The WELI tool in the LVIF project portfolio*

Tool relevance: The *SheVax+*, *GIVE*, *Advance* and *Women Rear* projects emphasized that empowerment is highly context-specific, requiring tools and methodologies that can adapt to local cultural, social and gender dynamics. These projects considered the WELI to be useful for capturing empowerment, but emphasized its shortcoming in capturing the full complexity of women's empowerment, especially in culturally diverse and economically disadvantaged settings. The projects argued that this shortcoming reduced the utility of the WELI for broader comparisons, making the tool more appropriate for longitudinal analysis within a specific project, rather than for cross-contextual comparisons.

Relevance of modules to project focus: Some projects highlighted that the WELI modules did not align to project objectives. Project-specific modules were added by ILRI to the WELI and a module on animal vaccines was implemented by all four LVIF projects. The *Women Rear* project focused on transformative approaches and noted the need for the WELI to capture gender norms that influence empowerment (e.g., norms limiting women's ability to frequent

public spaces may compromise women's ability to sell their produce at markets, therefore reducing their opportunities for income). A module addressing this issue was developed and added to the WELI. Adding new modules, however, increased the length of the tool, which was a recurrent concern for the projects. The module on "life satisfaction" (an optional indicator in the WELI) was found by *Give* to be the least relevant for the respondents.

Contextual relevance: The relevance of the WELI was frequently linked to its ability to capture the local context. *Advance* highlighted that the WELI indicators enable a granular and detailed analysis of empowerment, revealing local specificities. However, some projects faced challenges in fully aligning the WELI indicators with local empowerment indicators identified during qualitative studies. To enhance the local relevance of the tool, the projects suggested several implementation strategies:

- i. Leveraging local enumerators to build community trust.
- ii. Translating questions into the local language to ensure linguistic accuracy and contextual appropriateness, reducing the risk of misinterpretation. This also fostered trust between enumerators and respondents, making respondents feel more at ease.
- iii. Engaging both women and men enumerators to interact with respondents of the same gender.
- iv. Involving local leaders and mobilizers to facilitate smoother community entry and consent, ensuring participants' voluntary involvement.

Data quality: Contextual relevance of the tool emerges as being strongly associated with trust and with data quality. The projects mentioned that data quality was low when asking about sensitive topics such as gender roles, trust and respect in relationships among household members, and domestic violence. Respondents were either hesitant to answer or answered superficially. Sensitive questions about household dynamics were often skipped. The project suggested a number of practical measures to increase data quality. Single-sex interviews, as widely documented in the literature, ensured that participants could express themselves more freely, reducing response biases. Gender-sensitive approaches that also addressed power imbalances improved the accuracy of data and responses.

All projects emphasized that data quality was strongly dependent on robust training and capacity building of research teams on the WELI. Data quality was also associated with the length of the tool. The projects noted that administering the tool took up to three hours per respondent. This caused respondents fatigue, lack of interest and, generally, less accurate responses. Some projects increased the monetary incentive for respondents. One project implemented a shorter version of the WELI, and found it to be a substantial improvement. The projects suggested two solutions: focusing the survey only on the indicators that contribute to the index calculation, and collecting detailed information on demographics for WELI respondents only (rather than all members of the household) given that they are not required for calculating the WELI index. Digitizing the quantitative WELI tool, using ODK software and GPS mapping, was mentioned as being important for streamlined data collection, increased efficiency and improved accuracy. However, implementation of technology-aided data collection across the projects was not seamless. For example, the first project to implement the ODK WELI tool had to test multiple versions of the online data collection, and this caused delays. For *Shevax*, the use of digital tools was hindered by technical challenges, such as incompatibility with certain field conditions (limited electricity supply to charge the tablets), and limitations in data processing software.

Operational challenges: Logistical implementation challenges in the field were noted. For example, in contexts where women's mobility was restricted by male authority, one project provided brochures, training manuals and signed consent forms that the women could use to justify their participation in a project outside the home.

Other logistical challenges included finding both the main (index) women and the main men (typically spouses) at home to complete the survey because WELI requires two respondents per household (the index women and a main adult man in a household). The purpose of

including men is to estimate the gender parity index (the difference between women's and men's empowerment indices) in a bid to explore patterns in gender relations within the surveyed households. Some of the projects argued that their aim was not to test whether their interventions affected gender parity, justifying a reduction in the number of men sampled. Reducing the number of households where both a woman and a man would be interviewed helped, to some degree, to mediate the challenge of finding two required respondents in every household at the same time. A second challenge in identifying respondents was also encountered by a project where the enumerators assumed "the spouse" to always be a woman (the wife). WELI tool considers the index woman as the primary respondent, with the main man, who could be a spouse or primary adult male decision-maker, in each household considered as a secondary respondent. Some confusion ensued regarding whom to target with the tool. This also resulted in mistakes in the reported gender of some respondents.

Programmatic perspective: One project abandoned WELI for their endline survey and relied on their own customized qualitative survey tools, citing that the project budget had been assigned before they were requested to adopt the WELI. They therefore did not have the resources to carry out a large survey. Some projects faced challenges in quantitative data cleaning and analysis, requiring one project to hire a biostatistician as they considered data analysis too complex for their researchers. This challenge, however, was not reported by the other three projects. Qualitative data analysis was generally assumed to be easy and not requiring dedicated training. However, this approach reduced the ability of the projects to leverage qualitative insights into local contexts specificities.

7. Discussion and recommendations

In this discussion, we provide key recommendations to enhance the pro-WEAI and WELI tools based on the lessons learned from their implementation in two portfolios of agricultural and livestock development projects. The learnings and recommendations focus on four critical areas: (1) the tools' capacity to capture transformative change, (2) the challenge of asking sensitive questions, (3) the relevance of the modules, and (4) optimizing the length of the tools for practicality and usability. These insights are vital for the CGIAR and the CGIAR GENDER Platform to strengthen the development, implementation and refinement of these tools, as well as the related indicators used to measure women's empowerment.

Moreover, this discussion highlights what projects must consider to effectively document changes in women's empowerment, especially in terms of capturing the complexity, nuances, contextuality of empowerment and methodological rigor required. These recommendations are not only valuable for improving the pro-WEAI and WELI tools and their usage within CGIAR, but also have broader implications for research programs and institutions, as well as project and program implementers, such as IDRC, who seek to measure women's empowerment and program impacts across portfolios. The insights shared here will help guide informed decision-making about the suitability and application of these tools in various contexts.

Measuring transformative change: The pro-WEAI and WELI quantitative tools, because they are based on individual-level data, can measure aspects of empowerment at the individual and intra-household level. The qualitative tools may therefore be able to identify changes in individual beliefs and behavior associated with a given norm. The aggregation of such results may help assess whether the change was only reflected in a few individuals or was widespread enough to be a change in local norms. The extent of the changes in norms can also be assessed qualitatively, although respondents' ability to assess the geographical spread of a change is often limited. While the pro-WEAI and WELI tools can measure some aspects of transformative change, they will need to be complemented with other tools to

measure change in women’s empowerment at higher levels—at the community and society levels—to know whether systemic constraints have changed. For example, there are newly developed guidelines for measuring gender transformative change (FAO, IFAD, WFP & CGIAR GENDER Impact Platform 2023)

Asking sensitive questions: As reported by the projects, many topics covered by the pro-WEAI and WELI tools may be sensitive in many contexts, particularly questions on monetary and financial activities, intrahousehold dynamics and gender norms. Best practice suggests consulting local partners about the appropriate phrasing of questions and ways to build rapport and trust with the respondents before proceeding with sensitive questions. A practical checklist of recommendations is provided in the *Gender research ethics toolkit* by Faas et al. (2022, Appendix 1, p.33).

Relevance of modules: Empowerment is a dynamic, contextually nuanced and multidimensional concept. Comprehensive tools like pro-WEAI or WELI are recommended to capture the full spectrum of empowerment impacts. However, if a project’s primary focus is women’s empowerment, together with specific interventions, then projects need to invest in collecting in-depth data on empowerment and the nuances behind the mechanisms for that impact to unfold. Removing some parts of the index on an ad hoc basis could lead to missing unintended consequences and to limit the comparability of results. However, for projects where empowerment is not a primary goal or only involve “light-touch gender interventions” such as training that aims to reach women, but does not include gender-informed content, other more streamlined tools may be sufficient. For example, collecting two (instead of 10) pro-WEAI indicators on “input in livelihood decisions” and “control over income” may be sufficient for a project only aiming to reach or benefit women. Nonetheless, identifying the core modules needed for the index calculation and assessment of project performance is key. A consistent set of modules facilitates comparable assessments of empowerment across projects and across contexts.

Optimizing the length of the tools: We acknowledge the concern raised by the projects about respondent fatigue. The current versions of pro-WEAI and WELI are quite long, requiring 45 minutes or more for the empowerment module alone. This information also needs to be collected for two respondents per household, which is a significant time commitment for respondents. The WELI tool implemented by LVIF was at its “research” stage. Only by collecting extensive data, was the ILRI gender team able to identify what indicators were most relevant and what indicators were redundant. Later versions of the tool are shorter. Optimizing the length of the tool is also closely linked to identifying the modules that are most relevant, essential for index calculation and assessing the projects’ empowerment impacts.

Analysis and interpretation: The interpretation of the empowerment findings was challenging for the teams. Like any index, the meaning of the pro-WEAI or WELI scores comes from making comparisons. Within a project, empowerment scores can be compared between women and men, between beneficiaries and non-beneficiaries, and across other relevant sub-groups. The indices can be compared over time, between baseline and endline, and across projects. In other words, the power of the index is in making appropriate comparisons, and not the absolute number itself. This is why indicators need to be measured consistently so that any comparisons are valid. An important caveat is the choice of the benchmark, or what we are comparing the index with.

The issues of adopting universal indicators to make empowerment results comparable across contexts versus the need to adopt locally meaningful indicators also emerged. This is a difficult tension to resolve. A solution could be a better integration of qualitative and quantitative data. For example, the weight of each indicator for the index calculation could be adjusted based on the qualitative findings on empowerment. Alternatively, the quantitative component could include generic and universal domains of empowerment (e.g., access to financial solutions) while the associated indicators (e.g., access to MPESA accounts) could be locally relevant and identified through engagement with local communities. This, however, raises the issue of Dunning-Kruger effect: it is unlikely that a disempowered person is

aware of all the potentially relevant empowerment indicators. Yet again, a tension between universal and individual that needs addressing.

Our findings suggest that achieving consistent results across all CultiAF and LVIF projects—which is crucial for reliable meta-analysis—proved challenging, despite both programs adopting the same assessment tool. Factors contributing to this inconsistency include varying degrees of tool adoption at both baseline and endline stages of projects, limited funding for comprehensive implementation, difficulties in balancing scientific rigor with the practical demands of development work, and differences in team capacities for conducting qualitative and quantitative analyses. Additionally, detailed insight into the factors that caused inconsistency in data delivery was often lacking in project documents, making it difficult to take proactive steps in the future. While some of these challenges extend beyond WELI or WEAI and are common in research and systematic impact assessments, they significantly influence the effectiveness of these tools. Given the potential insights from meta-analyses across project portfolios, as well as the risk of diminished returns from underutilized surveys, it may be more efficient and impactful for funding agencies to consider employing a team of evaluators to apply the same tool consistently across projects.

Capacity: Implementation of the pro-WEAI and WELI tools requires well-trained field teams with the appropriate skills, in quantitative and qualitative data collection and analytical skills and appropriate linguistic skills for each context. Enumerators and interviewers must have sufficient training time to familiarize themselves with the instruments and the best practices for implementation. Because of short project timeframes and limited resources, many projects underinvest in enumerator training, which can lead to subsequent problems related to gender bias by enumerators, nonresponses, extended length of implementing the tool, respondent fatigue and overall reduced data quality. While this is not a challenge that is unique to the pro-WEAI and WELI tools, the lack of in-country capacities for conducting gender research can compound these challenges.

8. Conclusion

In conclusion, the consistent use of comprehensive tools like pro-WEAI and WELI for measuring empowerment across projects is essential for evaluating portfolio performance. A mixed-methods approach that combines both quantitative and qualitative data provides a nuanced understanding of empowerment impacts. It is important to strike a balance between maintaining consistency and allowing for contextual adaptation. To ensure data quality, project implementation and research design must be planned together, with adequate resources and capacity. Using a centralized evaluation team could enhance both cost-effectiveness and research quality.

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Appendixes

Appendix 1: Overview of the projects and the tools used

Table 3. An overview of the projects' objectives and empowerment strategies, the data available for each project, when it was collected, and the tools used

| Portfolio | Project short name | Location | Overall project objective | Empowerment strategies* | Baseline/ endline date (year) | Data (result) used for the synthesis | Research design |
|-----------|--------------------|---------------|---|--|-------------------------------|---|---------------------------|
| CultiAF | ACRE Africa-KALRO | Kenya | Develop and implement an innovative picture-based insurance product to reduce basis risk and improve farmer trust | <ul style="list-style-type: none"> • Provide goods and services by expanding access to climate-smart insurance for farmers • Build knowledge and skills by training champion farmers to support women's participation in insurance • Influence gender norms by promoting women's inclusion in insurance | 2021/2022 | <ul style="list-style-type: none"> • Quantitative pro-WEAI (baseline and endline), • Qualitative pro-WEAI | Experimental design |
| | FASIMO | Mozambique | Research and identify user-driven approaches to make government- and farmer-led smallholder irrigation schemes more productive, self-sustaining and equitable | <ul style="list-style-type: none"> • Provide goods and services by improving access to irrigation technology and market information • Build knowledge and skills by offering training that empowers women in irrigation management and decision-making | NA | <ul style="list-style-type: none"> • Qualitative pro-WEAI | Non-experimental design |
| | Fisheries | Malawi | Implement gender-transformative approaches by appointing "gender champions" in the fish value chain | <ul style="list-style-type: none"> • Build knowledge and skills by training gender champions to promote gender transformative approaches across the fish value chain • Influence gender norms by promoting gender equality through community-based training that empowers women in fisheries | 2020/2021 | <ul style="list-style-type: none"> • Quantitative pro-WEAI (baseline and endline) | Quasi-experimental design |
| | INSFEED | Kenya, Uganda | Rear black soldier flies for animal feed, testing different pathways for up-scaling technology | <ul style="list-style-type: none"> • Provide goods and services by scaling up black soldier fly technology for sustainable animal feed • Build knowledge and skills by training women entrepreneurs and other value chain actors in insect feed production | 2019/NA | <ul style="list-style-type: none"> • Quantitative pro-WEAI (baseline) | Quasi-experimental design |

| Portfolio | Project short name | Location | Overall project objective | Empowerment strategies* | Baseline/ endline date (year) | Data (result) used for the synthesis | Research design |
|-----------|--------------------|---------------|---|---|-------------------------------------|---|---------------------------|
| | IPM Mango | Zambia | Adapt and promote integrated pest management (IPM) interventions, assessing the socio-economic impacts on women and youth | <ul style="list-style-type: none"> Build knowledge and skills by training female decision-makers in mango production on sustainable pest management techniques | 2021/2022 | <ul style="list-style-type: none"> Quantitative pro-WEAI (baseline and endline) Qualitative pro-WEAI | Quasi-experimental design |
| | NutriFish | Uganda | Reduce micronutrient deficiencies in vulnerable groups by increasing access to and consumption of underutilized small fishes (USF). | <ul style="list-style-type: none"> Strengthen organizations by improve access to nutrient-rich fish for vulnerable groups. Build knowledge and skills by training women in using drudgery-reducing technologies like solar tent dryers. | 2020/2023 NA | <ul style="list-style-type: none"> Quantitative pro-WEAI (baseline and endline) Qualitative pro-WEAI | Quasi-experimental design |
| | Pre-Cooked Beans | Kenya, Uganda | Scale up precooked bean product production and consumption, emphasizing women's empowerment and socioeconomic improvements | <ul style="list-style-type: none"> Provide goods and services by increasing access to precooked bean products for improved nutrition and food security. Build knowledge and skills by training farmers on certified seed use and access to credit. Influence gender norms by empowering women through trainings to enhance their agency and bargaining power in agriculture. | 2018/2020 | <ul style="list-style-type: none"> Quantitative pro-WEAI (baseline and endline) Qualitative pro-WEAI, | Quasi-experimental design |
| | Sorghum | Ethiopia | Develop and deploy technologies to mitigate crop failure risks, boost productivity, and create economic opportunities for women entrepreneurs | <ul style="list-style-type: none"> Provide goods and services by developing sorghum markets and scaling climate-smart technologies. Build knowledge and skills by training women farmers to adopt sorghum technologies and improve productivity. | 2021/NA | <ul style="list-style-type: none"> Quantitative pro-WEAI (baseline) | Non-experimental design |

| Portfolio | Project short name | Location | Overall project objective | Empowerment strategies* | Baseline/ endline date (year) | Data (result) used for the synthesis | Research design |
|-----------|--------------------|------------------------|--|---|-------------------------------|---|---------------------------|
| LVIF | GIVE | Kenya | Enhancing women's participation in livestock vaccine distribution, delivery and use | <ul style="list-style-type: none"> • Increase access to vaccines through a demand driven model and a community vaccinator-driven model • Build knowledge and skills; Influence gender norms and enhance access to resources and markets through cooperatives/groups of women and men. | 2022/2023 | Baseline and endline: <ul style="list-style-type: none"> • qualitative WELI • quantitative WELI | Quasi-experimental design |
| | SheVax+ | Kenya, Uganda, Rwanda | Enhancing women's participation in livestock vaccine distribution, delivery and use | <ul style="list-style-type: none"> • -Increase access to vaccines through a 1) women centered private sector delivery; (entrepreneurship) model and 2) a demand centered model. • Build knowledge and skills • Influence gender norms | 2022 | Baseline: <ul style="list-style-type: none"> • qualitative WELI • quantitative WELI | Non-experimental design |
| | Advance | Nepal, Uganda, Senegal | Enhancing women's participation in livestock vaccine distribution, delivery and use | <ul style="list-style-type: none"> • Increase access to vaccines by building knowledge and skills through capacity development • Influence gender norms • Through gendered intersectional transformative approaches (GITA) | | Baseline and endline: <ul style="list-style-type: none"> • quantitative WELI | Quasi-experimental design |
| | Women Rear | Ghana | Enhancing women's participation in livestock vaccine distribution, delivery and use while identifying what accommodative or transformative approach was most effective | <ul style="list-style-type: none"> • Increase women's access to vaccines through a digital platform facilitated by community leaders, and improved cold chain • Transform gender norms through community conversations and gender champions | 2021/2023 | Baseline and endline: <ul style="list-style-type: none"> • qualitative WELI • quantitative WELI | Experimental design |

*The projects' empowerment strategies are grouped using the typology proposed in Johnson et al. (2018).

Appendix 2: IDRC empowerment projects — Project experiences

Name of project:

Names of team members and respective roles:

Project overview

1. Briefly describe what the project is about:
 - a. Describe the intervention, and different treatment arms if applicable, and describe the different activities in the intervention (resp. each of the treatment arms)
 - b. Who are your target beneficiaries?
 - c. Where you are operating
2. Briefly describe how your project aims to empower women:
 - a. What are your strategies for empowering women?
 - b. How do these strategies fit into your theory of change?
3. Describe the intervention, and different treatment arms if applicable, you implemented to address gender inequalities or empowerment gaps identified in the baseline survey. Also describe the different activities in the intervention (resp. each of the treatment arms)
4. What is the implementation or analysis strategy has been adopted to enable measurement of the causal impact of treatment (arms) (i.e. identification strategy)?
 - a. If randomized control trial: Was the intervention randomized across individuals, households, villages, districts, other?
 - b. If quasi-experimental impact assessment: Is the impact assessment based on difference-in-difference analysis, matching, regression discontinuity, instrumental variable, other...? And are the groups with and without treatment groups of individuals, households, villages, districts, other?
5. Describe your *quantitative* survey:
 - a. Sample sizes, by sex, by treatment arm (and control group):
 - b. When was the endline data collected?
 - c. If applicable, when was baseline data collected?
 - d. Treatment arms (e.g., control/comparison group, intervention group/s):
 - e. Who collected the data
6. Describe your *qualitative* data collection (if applicable):
 - a. When was the data collected?
 - b. In how many sites?
 - c. Sample sizes, by sex, by treatment arm (and control group):
 - d. What techniques were used?
 - e. Did these use the pro-WEAI qualitative instruments?
 - f. Who collected the data?

Project timeline

7. Brief timeline of your project (what you've accomplished so far, where you are now, next steps). Please include the approximate dates (month(s) and year) of:
 - a. Baseline and endline quantitative work
 - b. Any qualitative work
 - c. Intervention start and end dates
 - d. (anticipated) baseline and final reports

Empowerment study — results summary:

8. Describe highlights of the quantitative and qualitative (if available) results of the impact of the project on empowerment.
 - a.
 - b.
 - c.
 - d.

Success and challenges of the quantitative component of the empowerment study

9. Success:
 - a. Describe what worked particularly well during data collection?
 - b. What were the most interesting or unexpectedly positive or negative messages coming out of the data?
10. Challenges:
 - a. What was the greatest difficulty your team encountered during data collection?
 - b. What was the greatest challenge in data analysis and interpreting the estimates of impact on empowerment or other results?
11. Gender transformative change:
 - a. Which parts of the survey contribute to assessing change in gender norms and gender relations within a framework of gender transformative change?
 - b. How could the survey tools be improved to better capture these aspects?
12. Sensitive topics:
 - a. What was your experience during data collection with the sections relating to potentially sensitive topics (e.g. domestic violence, respect amongst household members)?
 - b. How did you deal with cultural sensitivities during data collection?
13. Survey length:
 - a. Did you or the respondents find survey lengthy?
 - b. How did you deal with the challenge of the survey duration?
 - c. How do you think the survey tool could be shortened most efficiently?

14. Which modules within the survey tool do you find
 - a. most important?
 - b. highly correlated (two or more modules provide the same information)?
 - c. least important?

Changes to data collection instruments or project

15. Midway, or after the first round of data collection and analysis, did you (do you intend to) make any corrections or changes related to
 - a. the data collection instruments? If so, which and why?
 - b. to intervention? If so, which and why?

Key messages

16. What key messages would you give others conducting such empowerment studies?

Future use of empowerment tools

1. Would you consider using the Pro-WEAI or WELI tool in your other projects or in future research activities? If not, why?

Qualitative results — if applicable

2. How do respondents understand empowerment?
 - a. Identify the defining characteristics of empowerment for the community; if the defining characteristics of men's and women's empowerment differ, please distinguish
 - b. What were key differences or similarities between men and women respondents in the way they understand empowerment and its defining characteristics?

Does the way respondents understand empowerment and its defining characteristics differ by respondents' social characteristics, such as e.g., class, livelihood patterns, ethnicity or age?
3. Summarize emerging qualitative results on empowerment, e.g.,:
 - a. In people's perspectives, what factors seem to influence men's and women's capacity to become empowered, e.g., type of family structure, livelihood patterns, other? Do such perspectives differ by respondents' gender, class, age or other?
 - b. Did you find a link between project activities and perceptions of increased or decreased empowerment?
4. Other qualitative results about understanding of empowerment, pathways towards empowerment, project's influence on empowerment or other results?

Challenges and success in the qualitative components

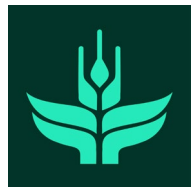
5. Comment on any difficulties in the qualitative data collection methods (e.g., selecting the sample, finding enumerators, timing or language of interview, specific qualitative modules)
6. What worked well? Can you offer some tips to others?
7. What are your next steps with the qualitative work (if any)?



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