GENDER Impact Platform

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# *A synthesis of changes in women's empowerment in two portfolios of agricultural and livestock development projects*

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**COVER PHOTO**: Harvesting groundnuts in Malawi. Credit: ILRI/Stevie Mann

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**DISCLAIMER**

This working paper has been internally peer-reviewed and the opinions expressed herein reflect those of the authors, not necessarily those of the CGIAR GENDER Impact Platform, the International Development Research Centre or its Board of Governors.

**DATA STATEMENT**

The data used in this working paper is available on request.

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*Alien invasive fruit flies in Southern Africa: Implementation of a sustainable IPM programme to combat their menaces* (IPM Mango): Monica Fisher, Hannah Gichungi, Holger Kirscht, Samira Mohamed, Beatrice W. Muriithi, Shepard Ndlela

*Harnessing dietary nutrients of under-utilized fish and fish processing by-products to reduce micronutrient deficiencies among vulnerable groups in Uganda* (NutriFish): Joyce Akumu, Lauren Chapman, Jackson Efitre, Lawrence Lubyayi, Margaret Masette, Hugo Melgar-Quiñonez, Winnie Nkalubo, Dorothy Nakimbugwe, Ruth Nsibirano

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# Abstract

The intrinsic and instrumental value of gender equality and women's empowerment is recognized by Sustainable Development Goal (SDG) 5. Evidence on positive changes to women's empowerment in agriculture and livestock interventions is expanding but is still relatively limited. Portfolios of projects focused on women's empowerment through agriculture and livestock interventions can provide key insights across approaches and contexts.

In this working paper, we synthesize evaluations of the effects of interventions with empowerment objectives from two portfolios of agricultural development projects: the Livestock Vaccine Innovation Fund and the Cultivate Africa's Future projects. These projects were implemented in 10 African countries and one South Asian country between 2017 and 2023, and funded by Canada's International Development Research Centre (together with others). The projects used the project-level Women's Empowerment in Agriculture Index (pro-WEAI) and the Women's Empowerment in Livestock Index (WELI) tools to measure empowerment. The main objective of this study is to examine whether the agriculture- and livestock-related development projects impacted women's empowerment at the portfolio level, to draw conclusions for the design and implementation of future project portfolios that aim to enhance gender equality and women's empowerment.

We use both quantitative and qualitative data reported by the projects in the two portfolios. The quantitative analysis synthesizes impact estimates on WELI and pro-WEAI aggregate indices from projects using quasi-experimental or experimental designs, as well as percentage changes in these indices between baseline and endline assessments. The qualitative analysis examines patterns of commonalities or differences in how empowerment is conceptualized, how it evolves over the course of the projects, and how project participants perceive changes in their lived empowerment experience.

The quantitative results show mostly null findings, consistent with the emerging empowerment literature that suggests moving the needle on women's empowerment requires intentional programming and appropriate levels of investment. We find the most promising results are from projects with explicit strategies to influence and transform gender norms.

The qualitative findings highlight the importance of capturing local conceptualizations of empowerment to contextualize empowerment and its quantitative assessments. The results show that resource ownership is a key indicator of empowerment for both women and men. Women, however, most value the ability to manage their finances independently while men most value being able to support other family members. Both women and men see the value of groups for their empowerment. Finally, women's empowerment is tied to men's support.

The results provide much needed information on the most effective approaches to support women's empowerment, indicating that intentional and transformative approaches are most beneficial. Methodologically, the working paper shows (1) the importance of portfolio projects with shared goals and consistent measurement tools for women's empowerment, (2) the complexity of combining the goals of research and those of development partners, (3) the value of using both quantitative and qualitative methods, and (4) the need for dedicated financial resources to support systematic impact assessments, meta-analysis and synthesis work.

***Keywords***: *women's empowerment, evaluation techniques, development projects, cropping systems, fisheries, livestock systems, Africa, South Asia*

# 1. Introduction

## 1.1 Relevance

Over the last decades, there has been increasing recognition of the intrinsic and instrumental value of gender equality and women's empowerment. The adoption of SDG 5 Gender Equality attests to that. Yet, gender inequalities remain widespread, and the empowerment of women is limited in many parts of the world and in various sectors, including in agriculture and livestock. The 2023 Status of Women in Agrifood Systems report by the Food and Agriculture Organizations (FAO) demonstrated there are significant and persistent gender gaps in low- and middle-income countries (LMICs) that are worsening with climate change and other crises, and have negative implications on productivity, food security and livelihoods (FAO 2023).

Reaching women with development interventions is not always sufficient for reducing gender gaps and empowering women in agriculture and livestock (Njuki et al. 2022). Facilitating women's empowerment depends on addressing women's restrained agency, resource access disparities and discriminatory gender norms, and on adopting supportive and inclusive policies. Gender-transformative efforts, bundled with gender accommodative approaches, can reduce the strength of restrictive norms (Njiru et al. 2024). Subsequently, women may gain the ability to make strategic life choices and access opportunities that improve well-being, food security, income and health.

The evidence base of the most effective approaches to support women's empowerment in agriculture, and more specifically in crops and livestock systems, is expanding. Some donors use a portfolio approach for their investments in women's empowerment, where projects operate within a particular thematic focus and share common goals. Consistent evaluations of the effects on women's empowerment of these projects and their synthesis at the portfolio level are important sources of evidence about what works to empower women and to help close the empowerment gap. This evidence can inform the design and implementation of future projects aimed at enhancing gender equality and women's empowerment.

## 1.2 Literature and evidence

There are few examples of assessments of project portfolios in low- and middle-income countries (LMICs) that aim to support women's empowerment in crops and livestock systems, employ consistent frameworks, and record standardized, validated measures of women's empowerment across the entirety of the projects (see also Baltenweck et al. 2024).

One example is a mixed-methods evaluation synthesis of agriculture-related interventions under the UN Joint Programme on Accelerating Progress towards the Economic Empowerment of Rural Women (JP RWEE) portfolio in Ethiopia, Niger, Nepal and Kyrgyzstan by Quisumbing et al. (2022). These interventions adopted a holistic approach to women's economic empowerment, focusing on four interrelated outcomes: (1) improved food and nutrition security, (2) increased income to sustain livelihoods, (3) enhanced participation in decision-making, and (4) a more gender-responsive policy environment for rural women in agriculture (FAO et al. 2020). The synthesis was based on the 'Reach, Benefit, Empower, and Transform' (RBET) Framework and compares the empowerment impacts of the program using the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI).

The synthesis reveals improvements in women's overall empowerment measures and gender parity across these countries. Furthermore, the study shows that women in these countries experienced positive changes in their collective agency indicators. In Kyrgyzstan in particular, an intervention approach involving both women and men resulted in positive

outcomes across various indicators. However, the study noted tradeoffs between productive and reproductive responsibilities, despite the impact on the overall workload being mostly insignificant. These findings, alongside qualitative findings, show that livelihood interventions inherently lead to unintended consequences of increased workload for women.

The evaluation synthesis of 13 agriculture- and livestock-related projects under the second phase of the Gender, Agriculture and Assets Project (GAAP2) in South Asia and Africa also provides valuable insights (Quisumbing et al. 2024). This synthesis involves mixed-method evaluations to assess the impact of projects on women's empowerment and gender equality, using the project-level Women's Empowerment in Agriculture Index (pro-WEAI). GAAP2 facilitated the development of the pro-WEAI survey and qualitative protocols for impact evaluations, examining the effects on both women's and men's empowerment and household gender parity.

The GAAP2 synthesis finds that, although many projects set out with goals to empower women, few significantly impacted aggregate pro-WEAI indices. Notable successes include the nutrition-sensitive agricultural project Agriculture, Nutrition and Gender Linkages (ANGeL) and the Food and Agricultural Approaches to Reducing Malnutrition (FAARM) malnutrition reduction project in Bangladesh, Heifer International's livestock transfer project in Nepal, and WorldVeg's vegetable production project in Mali. However, it is important to acknowledge that some of these women-targeted projects had unintended negative impacts on men's empowerment. For instance, men participating in the Agricultural Value Chain project in Bangladesh and the Grameen savings and credit project in Burkina Faso experienced increased workloads due to an increase in the types of income-related decisions they could make. Meanwhile, in the Grameen project and Ethiopia's UN Joint Programme on Rural Women's Economic Empowerment (JP RWEE) project, men that lost access to credit either due to loan nonrepayment or withdrawal from savings and credit groups saw a decline in their autonomy over income-related decisions. These complex and unintended negative outcomes presented a risk of potential backlash against women's empowerment initiatives (Quisumbing et al. 2024).

The Soutenir l'Exploitation Familiale pour Lancer l'Élevage des Volailles et Valoriser l'Économie Rurale (SELEVER) poultry production project in Burkina Faso showed positive outcomes in poultry management but did not significantly impact women's self-efficacy, work balance or gender norms (Doss et al. 2022; Leight et al. 2020; Quisumbing et al. 2022). In the GAAP2 evaluation synthesis, statistically significant impacts were more commonly observed in instrumental and collective agency indicators than in intrinsic agency. Notably, most projects aiming to shift discriminatory gender norms did not have significant impacts on intrinsic agency indicators, possibly because they were not directly targeted or because intrinsic agency is tied to the gradual process of normative change, which may not be easily detectable by quantitative measures within the short duration of impact evaluations. For instrumental and collective agency indicators, successful projects used intentional empowerment strategies, adapted to cultural contexts, and carefully anticipated potential unintended consequences such as backlash or increased workloads. Projects in South Asia showed a stronger positive impact on women's empowerment compared to projects in Africa. These regional patterns may be reflecting contextual differences in gender norms, coupled with differences in program design and implementation. The synthesis underscores the importance of explicitly prioritizing empowerment goals, rather than presuming that simply targeting women will lead to empowerment (Quisumbing et al. 2024).

A scoping review conducted in 2021 and 2022 provides insights on the impact of 106 livestock interventions on women's empowerment (and gender equality) (Baltenweck et al. 2024). The review identifies three indicators most commonly used among the studies to assess changes in empowerment: decision-making, division of labor and control over assets. Among the analyzed interventions, cooperatives and groups, as well as extension services including the animal health or forage advice and inputs, emerged as effective in enhancing women's empowerment by providing platforms for collective decision-making and equipping women with livestock management skills. However, many interventions increased women's labor and workloads, indicating the need for a balanced approach to ensure overall well-being.

Studies focusing on bundled interventions, such as asset transfer combined with extension services, consistently reported positive effects on women's empowerment; transformative interventions seemed the most promising approach, but evidence was very limited. The review highlights the growing yet limited evidence on the link between women's empowerment and livestock, and argues that the adoption of homogenous indicators of empowerment across projects is necessary to learn what empowerment approaches are most impactful.

## *1.3 Research objectives*

The overall objective of this paper is to synthesize and learn from a portfolio of agriculture- and livestock-related development projects about their achievements for women's empowerment. The projects measured women's empowerment consistently by using the project-level WEAI (pro-WEAI) for the agriculture-related projects, and the Women's Empowerment in Livestock Index (WELI) for the livestock-related projects.

This working paper addresses the following research question: What did the agriculture- and livestock-related development projects achieve for women's empowerment? How does this aggregate at the project portfolio level?

We introduce the two portfolios analyzed by this study, explain the methodology adopted, and present the qualitative and quantitative results that emerged from our meta-analysis of the two portfolios. We then discuss the significance and key applications of the results for future policy development, program implementation, extension work and other agriculture- and livestock-related interventions.

# 2. Context

This working paper draws from two portfolios funded by Canada's International Development Research Centre (IDRC) and co-funded by other partners: Cultivate Africa's Future (CultiAF) and the Livestock Vaccine Innovation Fund (LVIF) (Table 1). CultiAF included eight projects focused on crop and fisheries systems in seven projects East African countries. LVIF included four projects focused on livestock systems in one South Asian and five African countries.

IDRC funded the CultiAF projects in partnership with the Australian Centre for International Agricultural Research (ACIAR). The CultiAF projects used pro-WEAI to measure project impacts on women's empowerment and worked in Ethiopia, Kenya, Malawi, Mozambique, Uganda, Zambia and Zimbabwe (Table 1). However, not all data had been reported at the time of writing. Additionally, most of the projects used pro-WEAI qualitative tools to research changes in conceptions of empowerment, as well as lived empowerment, over the course of the study. The most common empowerment strategy used by all eight CultiAF projects was building knowledge and skills, often targeted to women beneficiaries. Five projects provided goods and services, three projects aimed to influence gender norms through gender champions and gender-focused training content, and one project promoted inclusive groups (Table 1).

LVIF was a unique partnership of IDRC, the Bill & Melinda Gates Foundation and Global Affairs Canada to fund cutting-edge research on animal vaccines that inform livestock policies in LMICs. Four research projects were funded and initiated in 2019 in six countries: Kenya, Ghana, Nepal, Senegal, Uganda and Rwanda. The research studied the effectiveness of approaches to support rural women to effectively participate in and benefit from livestock systems, with the ultimate goal of increasing livestock productivity and improving household food security. Collectively, these projects aimed to strengthen the evidence base of the barriers rural women in LMICs face in livestock systems, and approaches that can support their participation in and control over the benefits of livestock vaccines.

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. 2021, 2023; Njiru et al. 2024; Ogolla et al. 2022; Omondi et al. 2022). All LVIF projects measured changes in women's empowerment quantitatively, through WELI. These projects 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 in focus group discussions, and individual and key informant interviews. Other methods included outcome mapping, photovoice, participatory observation and experiential learning (McKune et al. 2023).

*Table 1. An overview of the projects' objectives and empowerment strategies, the data available, and the tool used*

| Portfolio | Project short name | Location | Overall project objective | Empowerment strategies* | Baseline/ endline date (year) | Data (result) and tool 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 | Provide goods and services by expanding access to climate-smart insurance for farmers<br><br>Build knowledge and skills by training champion farmers to support women's participation in insurance<br><br>Influence gender norms by promoting women's inclusion in insurance | 2021/2022 | 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 | Provide goods and services by improving access to irrigation technology and market information<br><br>Build knowledge and skills by offering training that empowers women in irrigation management and decision-making | NA | Qualitative pro-WEAI | Non-experimental design |
| | Fisheries | Malawi | Implement gender-transformative approaches by appointing "gender champions" in the fish value chain | Build knowledge and skills by training gender champions to spread gender-transformative approaches across the fish value chain<br><br>Influence gender norms by promoting gender equality through community-based training that empowers women in fisheries | 2020/2021 | Quantitative pro-WEAI (baseline and endline) | Quasi-experimental design |
| | INSFEED 2 | Kenya, Uganda | Rear black soldier flies for animal feed, testing different pathways for up-scaling the technology | Provide goods and services by up-scaling the technology that rears black soldier flies for sustainable animal feed<br><br>Build knowledge and skills by training women entrepreneurs and other value-chain actors in insect feed production | 2019/NA | Quantitative pro-WEAI (Baseline) | Quasi-experimental design |

| Portfolio | Project short name | Location | Overall project objective | Empowerment strategies* | Baseline/ endline date (year) | Data (result) and tool used for the synthesis | Research design |
|---|---|---|---|---|---|---|---|
| | IPM Mango | Zambia | Adapt and promote integrated pest management interventions, assessing the socio-economic impacts on women and youth | Build knowledge and skills for women decision-makers in mango production by training in sustainable pest management techniques | 2021/2022 | Quantitative pro-WEAI (baseline and endline)<br><br>Qualitative pro-WEAI | Quasi-experimental design |
| | NutriFish | Uganda | Reduce micronutrient deficiencies in vulnerable groups by increasing access to and consumption of underutilized small fishes | Strengthen organizations by improving access to nutrient-rich fish for vulnerable groups<br><br>Build knowledge and skills by training women in using more efficient technologies, such as solar tent dryers | 2020/2023 | Quantitative pro-WEAI (baseline and endline)<br><br>Qualitative pro-WEAI | Quasi-experimental design |
| | Precooked Beans | Kenya, Uganda | Scale-up precooked bean product production and consumption emphasizing women's empowerment and socioeconomic improvements | Provide goods and services by increasing access to precooked bean products for improved nutrition and food security<br><br>Build knowledge and skills by training farmers in certified seed use and access to credit<br><br>Influence gender norms by empowering women to enhance their agency and bargaining power in agriculture through training | 2018/2020 | - Quantitative pro-WEAI (Baseline and endline)<br><br>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 | Provide goods and services by developing sorghum markets and scaling climate-smart technologies<br><br>Build knowledge and skills by training women farmers to adopt sorghum technologies and improve productivity | 2021/NA | Quantitative pro-WEAI (baseline) | Non-experimental design |

| Portfolio | Project short name | Location | Overall project objective | Empowerment strategies* | Baseline/ endline date (year) | Data (result) and tool used for the synthesis | Research design |
|---|---|---|---|---|---|---|---|
| LVIF | GIVE | Kenya | Enhance women's participation in livestock vaccine distribution, delivery and use | Increase access to vaccines through a demand- and community vaccinator-driven model<br><br>Build knowledge and skills, influence gender norms and enhance access to resources and markets through cooperatives or groups of women and men | 2022/2023 | Baseline and endline<br><br>Qualitative WELI<br><br>Quantitative WELI | Quasi-experimental design |
| | SheVax+ | Kenya, Uganda, Rwanda | Enhancing women's participation in livestock vaccine distribution, delivery and use | Increase access to vaccines through (1) a women-centered, private sector delivery model (entrepreneurship) and (2) a demand-centered model<br><br>Build knowledge and skills<br><br>Influence gender norms | 2022/NA | Baseline<br><br>Qualitative WELI<br><br>Quantitative WELI | Non-experimental design |
| | UF Advancing | Nepal, Uganda, Senegal | Enhancing women's participation in livestock vaccine distribution, delivery and use | Increase access to vaccines by building knowledge and skills through capacity development<br><br>Influence gender norms through gendered, intersectional, transformative approaches | 2020/2021 and 2022/2023 | Baseline and endline<br><br>Quantitative WELI | Quasi-experimental design |
| | Women Rear | Ghana | Enhancing women's participation in livestock vaccine distribution, delivery and use, while identifying which accommodative or transformative approach was most effective | Increase women's access to vaccines through a digital platform, facilitated by community leaders, and through improved cold chain<br><br>Transform gender norms using community conversations and gender champions | 2021/2023 | Baseline and endline<br><br>Qualitative WELI<br><br>Quantitative WELI | Experimental design |

** The projects' empowerment strategies are grouped using the typology proposed in Johnson et al. (2018). Full project names are as follows:* **CultiAF:** *Improving agricultural productivity and resilience with satellite and cellphone imagery to scale climate-smart crop insurance (ACRE Africa-KALRO), Farmer-led Smallholder Irrigation in Mozambique (FASIMO), Gender Inclusive Financing for Scaling up Improved Fish Processing Technologies in Malawi (Fisheries), Insect feed for poultry, fish and pig production in Kenya and Uganda- Phase 2 (INSFEED 2), Alien invasive fruit flies in Southern Africa: Implementation of a sustainable IPM programme to combat their menaces (IPM Mango), Harnessing dietary nutrients of under-utilized fish and fish processing by-products to reduce micronutrient deficiencies among vulnerable groups in Uganda (NutriFish), 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 (Precooked Beans), Climate-smart sorghum interventions for smallholder farmers in Ethiopia (Sorghum);* **LVIF:** *Gender Inclusive Vaccine Ecosystem: Enhancing Distribution and Delivery Systems for Newcastle Disease (ND) and Contagious Caprine Pleuropneumonia (CCPP) among Smallholder Farmers (GIVE), SheVax+ Project: Hearing their voices: Action research to support women's agency and empowerment in livestock vaccine distribution, delivery and use in Rwanda, Uganda and Kenya (SheVax+), Transforming the Vaccine Delivery System for Chickens and Goats in Ghana:* What Approaches and What Benefits for Women *(The Women Rear Project), Advancing women's participation in livestock vaccine value chains in Nepal, Senegal and Uganda (UF Advancing).*

*(More detail on the projects' objectives and empowerment strategies is available from the authors in the detailed overview of the objectives and empowerment strategies of the Cultivate Africa's Future (CultiAF)* **and** *the Livestock Vaccine Innovation Fund (LVIF) projects.)*

# 3. Data and methods

We analyzed the qualitative and quantitative findings of the projects' reported impacts on women's empowerment, measured using pro-WEAI and WELI tools. We conducted a meta-analysis of the qualitative findings from individual projects. The quantitative meta-analysis is limited to projects that reported on impacts attributable to the interventions, and percentage change of empowerment indices between baseline and endline for projects with experimental or quasi-experimental designs. Based on the analysis of project- and portfolio-level achievements for women's empowerment, we draw programmatic and methodological lessons from that meta-analysis.

## *3.1 Pro-WEAI and WELI tools for measuring impact of projects on women's empowerment*

Pro-WEAI is a standardized and internationally validated tool for measuring women's empowerment in various types of agricultural development projects. It 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 GAAP2 (Malapit et al. 2019). The pro-WEAI tools[1] include 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 quantitative results that may need more in-depth understanding. Although it is primarily designed for measuring the empowerment impact of agricultural development interventions within a typical project timeframe, pro-WEAI can also be used as a diagnostic to identify the most important areas that programs should address.

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). These include:

- 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
  - visits to important locations
- collective agency
  - group membership

[1] More information about the tools is available at https://weai.ifpri.info/weai-resource-center/guides-and-instruments/

WELI is also a standardized and internationally validated tool for measuring women's empowerment in settings where livestock farming is the dominant form of livelihood. It can be used to assess the impact of livestock-related development interventions on women's empowerment and identify the domains that contribute most to women's disempowerment, to inform projects' empowerment strategies. WELI was co-developed in 2014–15 by livestock and gender experts from ILRI and Emory University. 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. As such, the pro-WEAI is nested within the WELI instrument, which enables the calculation of pro-WEAI indicators with additional indicators specific to livestock (Figure 1). WELI has been implemented in various countries including Benin, Burkina Faso, Burundi, DRC Congo, Ethiopia, Ghana, Kenya, Nepal, Rwanda, Senegal, Tanzania, Uganda and Viet Nam.

WELI consists of quantitative and qualitative parts. The qualitative part explores local gendered meanings of empowerment and the changes in empowerment as experienced by the respondents or project participants. The quantitative part is made up of 13 indicators that measure three types of agency: intrinsic, instrumental and collective agencies. All the 10 pro-WEAI indicators are included as well as additional WELI-specific indicators. Some of the pro-WEAI indicators, such as autonomy in income, attitudes about intimate partner violence against women and visiting important locations, are adjusted to include additional or updated scenarios or options relating to livestock. The WELI-specific indicators consist of one additional module on input in household decisions with a livestock focus and two indicators about respect among household members and membership in influential groups. These two indicators were originally part of the pro-WEAI pilot version and have been designated as optional modules for users who would like to collect them. For WELI, although a few projects found these indicators challenging to collect, most projects found them useful, particularly the connection with project interventions.

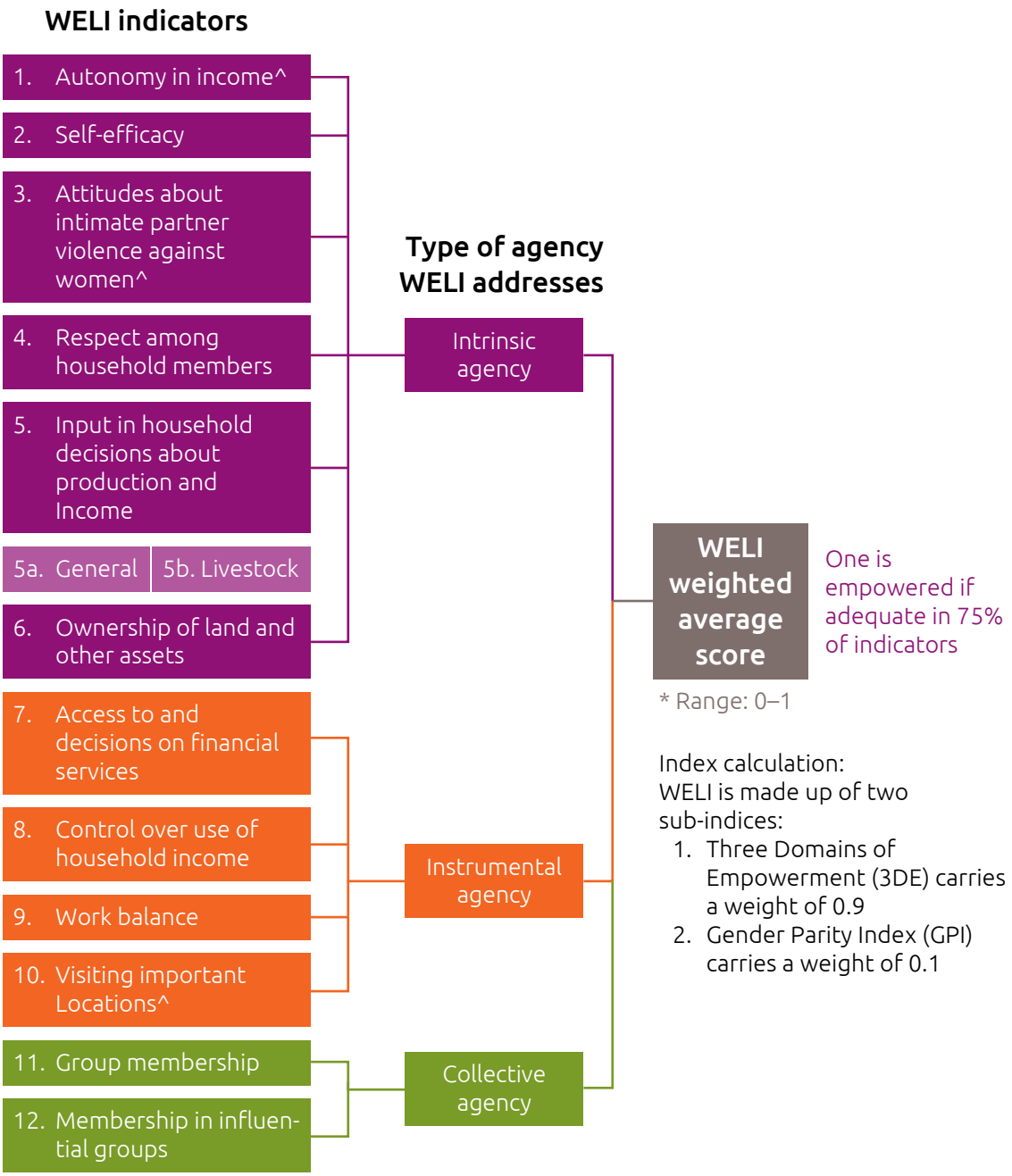


***Figure 1. Construction of pro-WEAI and WELI, highlighting the WELI indicators with additional and updated livestock scenarios.***

*Notes: * Higher values indicate greater empowerment; ^ updated with/includes additional scenarios pertaining to livestock; indicator 5b is new in WELI and does not exist in pro-WEAI*

# 3.2 Data

The main source of data for this study is the analyzed data that the projects shared with the authors by completing the narrative and quantitative templates

The templates were developed by the authors and include qualitative and quantitative findings of the projects' impact on women's empowerment, measured using pro-WEAI and WELI tools, as well as key metadata about project and research design.

Table 1 provides an overview of the data available for each project, when it was collected, and which tool—pro-WEAI or WELI—was used.

## 3.3 Method of analysis of the quantitative findings of the projects

The quantitative impact outcomes reported by CultiAF and LVIF include aggregate indices calculated from the following individual- or household-level variables:

- whether the individual is empowered, defined as achieving at least an empowerment score of 75% (binary)
- empowerment score, calculated by the weighted proportion of indicators in which a respondent is adequate (continuous)
- whether the household achieves gender parity, meaning the woman is empowered, or her empowerment score is greater than, or equal to, the empowerment score of the male decision-maker in her household (binary)

The projects vary in their use of experimental, quasi-experimental or non-experimental designs and, therefore, not all findings qualified as impact estimates. Most projects were designed to determine the causal impact of their intervention on WELI and pro-WEAI aggregate indices, but across all projects, only two used full randomization to select the treated individuals. Additionally, the projects varied in the results they reported. Projects that reported impact estimates are presented in Section 4. Several projects, despite having at least a quasi-experimental design, did not report quantitative impact estimates, and instead reported the index values for treated and control groups at baseline and endline. For these projects, we reported the percentage change in the aggregate indices between the baseline and endline surveys for each experimental group. Percentage change is reported for all projects where calculation was possible, even if impact estimates are also reported. For projects that reported standard errors for these indices, we calculated the statistical significance of this percentage change. For projects that have multiple treatment arms, each impact estimate reported is the coefficient estimate of the specific treatment relative to the control, and the percentage change reported is the change from baseline to endline for the specific treatment arm.

Percentage change is reported for the following aggregate index values (calculated using Dione et al. 2024):

- 3DE: Three Domains of Empowerment Index [1 - (H*A)]
- H: percentage of individuals not achieving empowerment, or the disempowerment headcount ratio
- A: mean disempowerment score
- GPI: Gender Parity Index
- HGPI: percentage of households not achieving gender parity
- IGPI: mean empowerment gap
- pro-WEAI: the weighted average of the 3DE and GPI, in which the Three Domains of Empowerment (3DE) receives 0.9 weight and the GPI receives 0.1 weight

## *3.4 Method of analysis of the qualitative findings reported of the projects*

We started by separately analyzing the qualitative findings reported by the LVIF and CultiAF projects. We used the following approach:

1. Identified three sub-questions to guide the qualitative analysis of the first objective of this working paper:
    a. What were the conceptualizations of empowerment captured by the projects?
    b. Did the conceptualization of empowerment change in the lifetime of the project? If so, how?
    c. Did project participants experience any changes in their lived empowerment (beyond conceptualizations)?
2. Identified what template data would help answer the three research sub-questions.
3. Mapped which projects shared evidence on which sub-question.
4. Collated the findings provided by the projects under each sub-question in an Excel file.
5. Analyzed the findings as follows:
    a. For sub-question a, we identified common patterns or differences in conceptualizations of women's and men's empowerment by both women and men respondents—first for each project, and then across projects.
    b. For sub-question b, we compared baselines and endlines to assess changes in the conceptualization of women's and men's empowerment. We then compared the changes across the projects to identify common and different patterns of change.
    c. For sub-question c, we analyzed the self-reported impact of project interventions on various domains of empowerment: ownership, access to and control over productive resources, market participation, financial autonomy and decision-making.
6. The main qualitative findings were recorded separately for LVIF and CultiAF, also highlighting instances where some of the data were not available (not reported in this working paper).
7. We then compared the findings across the two program portfolios, LVIF and CultiAF, and identified commonalities and differences. These findings have been reported in Section 4 under each of the three sub-questions for qualitative analysis.

# 4. Results

We first present the synthesis of the quantitative results from the CultiAF projects and LVIF projects, followed by a synthesis of qualitative results from both projects.

## *4.1 Synthesis of quantitative results from CultiAF projects*

Most projects had an explicit design for determining the causal impact of their interventions on key outcomes, such as pro-WEAI aggregate indices. Of all eight CultiAF projects, only one—ACRE Africa-KALRO—used a randomized control design, randomly enrolling participants into one of two insurance programs, and keeping a control group (a third group that received picture-based monitoring with no insurance policy).

Many projects, while falling short of full randomization, used a quasi-experimental impact design. Malawi Fisheries and NutriFish implemented their interventions according to fish landing sites, assigning some locations as "control" and others as "treatment." INSFEED 2, IPM Mango and Precooked Beans established control and treatment groups but varied in the quantitative data reported. INSFEED 2 did not establish control and treatment groups for the baseline survey, planning to define them prior to the endline survey; however, they did not report endline data. Precooked Beans reported impacts on empowerment, but the baseline data did not categorize respondents into treatment and control groups. Sorghum delivered the intervention to all study participants and did not have a control group. Sorghum planned to determine impact by looking at the change in women's empowerment, as well as other aggregate indices, between the two time periods. Finally, FASIMO did not have a design for measuring program impact.

Values of all pro-WEAI aggregate indices at baseline and endline were reported by four projects: IPM Mango, Fisheries Malawi, ACRE Africa–KALRO, and NutriFish. Unlike other projects, IPM Mango divided their sample into three categories: women in dual-headed households (DHHs); men in DHHs; and women in female-headed households (FHHs).

Figure 2 shows the percentage change in all aggregate indices for IPM Mango. For an individual treatment arm, the changes in aggregate indices based on household-level variables (i.e., GPI, percentage achieving gender parity, average empowerment gap and pro-WEAI) are the same across men and women. Overall, the changes are smaller for the treatment group compared to the control group. The results for the control group show large increases in the 3DE and percent empowered for women, GPI and pro-WEAI in both household types, relative to increases in those indices for men. In the treated group, changes are very small, except for relatively large increases in 3DE and percent empowered for women in FHHs. Unfortunately, we cannot test the statistical significance of changes to these indices over time because standard errors were not reported.

Figure 3 shows the percentage change in ACRE Africa–KALRO aggregate indices from baseline to endline. As shown, the changes in women's empowerment (as well as men's empowerment) and gender parity from baseline to endline were negative for the control group as well as all treatment groups. The project did report standard errors; however, none of these changes are statistically significant. These results should be interpreted with caution, as they do not control for other confounding factors, and the fact that empowerment and gender parity deteriorated in the control group signals that there may be other factors driving these results.

Figure 4 shows the percentage change in NutriFish indices from baseline to endline. The percent change in percent empowered for women in the control group was negative and

statistically significant, as were 3DE, percent empowered, and mean adequacy score among disempowered for men in the treated group. Interestingly, for all groups, the percentage achieving gender parity increases, and the average empowerment gap decreases, though these changes are not statistically significant.

Figure 5 shows the percentage change in pro-WEAI aggregate indices for Fisheries, which reported that both the 3DE and empowerment proportion increased for women and decreased for men, resulting in a higher proportion of households that achieved gender parity. However, these changes cannot be tested for statistical significance because standard errors were not reported.

While most projects had some form of impact design, quantitative impact estimates are only available for IPM Mango and NutriFish. The impact of the IPM Mango intervention on various outcomes for the treated groups is shown in Figure 6. The intervention had a positive impact on the empowerment score and percent empowered of men and both women in dual-headed and female-headed households. However, the project reported negative impacts on gender parity. The gender-parity impact results seem at odds with the percentage change results from IPM Mango, but we were unable to unpack these findings further given the data available. None of these impacts are statistically significant.

The impact of the NutriFish intervention on various outcomes for the treated groups is shown in Figure 7. These impacts are estimated to be considerably smaller than those of IPM Mango, with the percent empowered for women impacted positively; and men's empowerment score and percent empowered, as well as the percent of households achieving gender parity, impacted negatively. There was no impact on the empowerment score of women. Note that none of these impacts are statistically significant.

For INSFEED 2 and Sorghum, index values are available from the baseline survey, but not from the endline surveys. For Precooked Beans, index values are not separated by treatment arm, making the calculation of percentage change from baseline to endline impossible. For FASIMO, which did not have an impact design, no quantitative data is available. For CultiAF, the quantitative findings are mostly null or insignificant, and the projects with promising findings have strategies to influence gender norms and strengthen organizations.

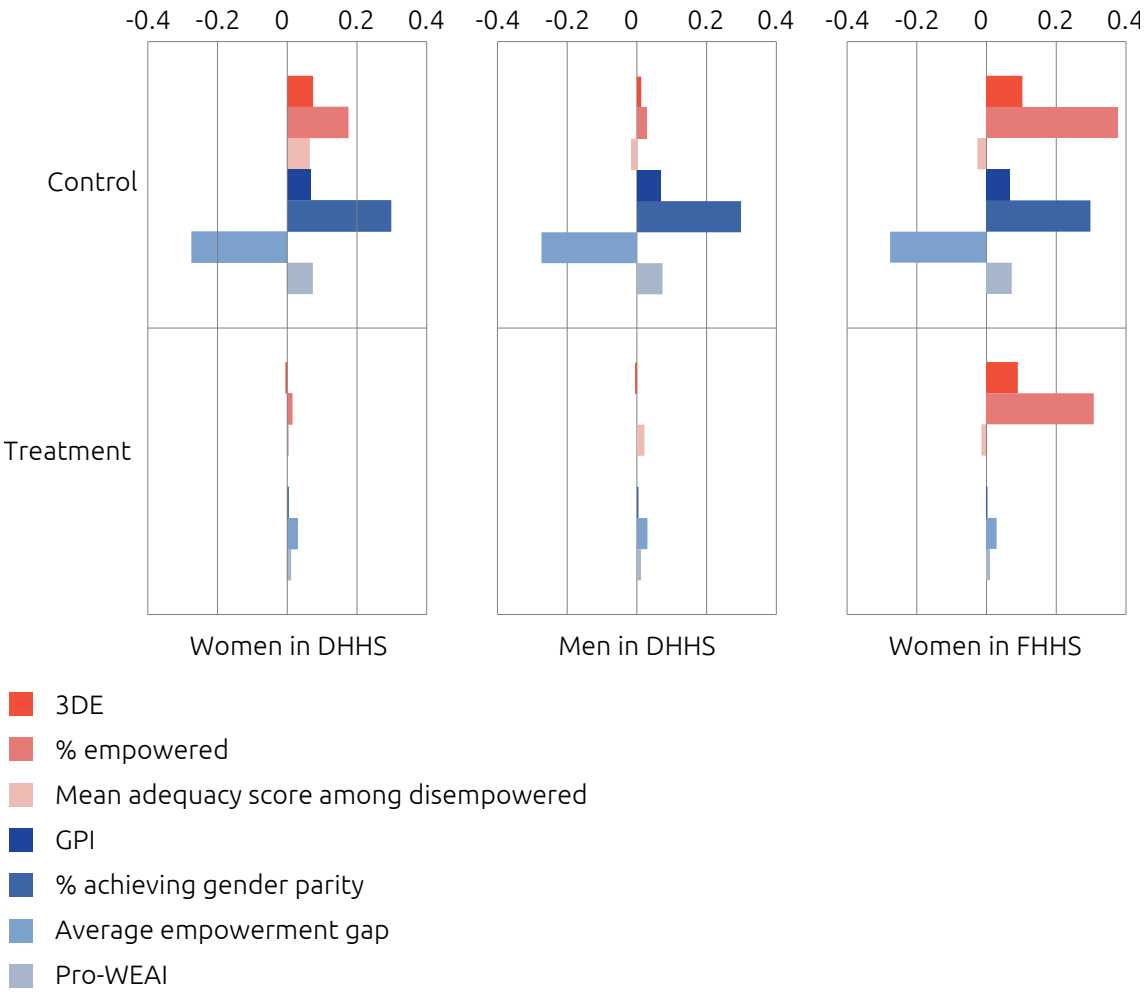


***Figure 2. IPM Mango: percentage change in pro-WEAI aggregate indices***

*Note: Significance tests could not be calculated due to data availability.*

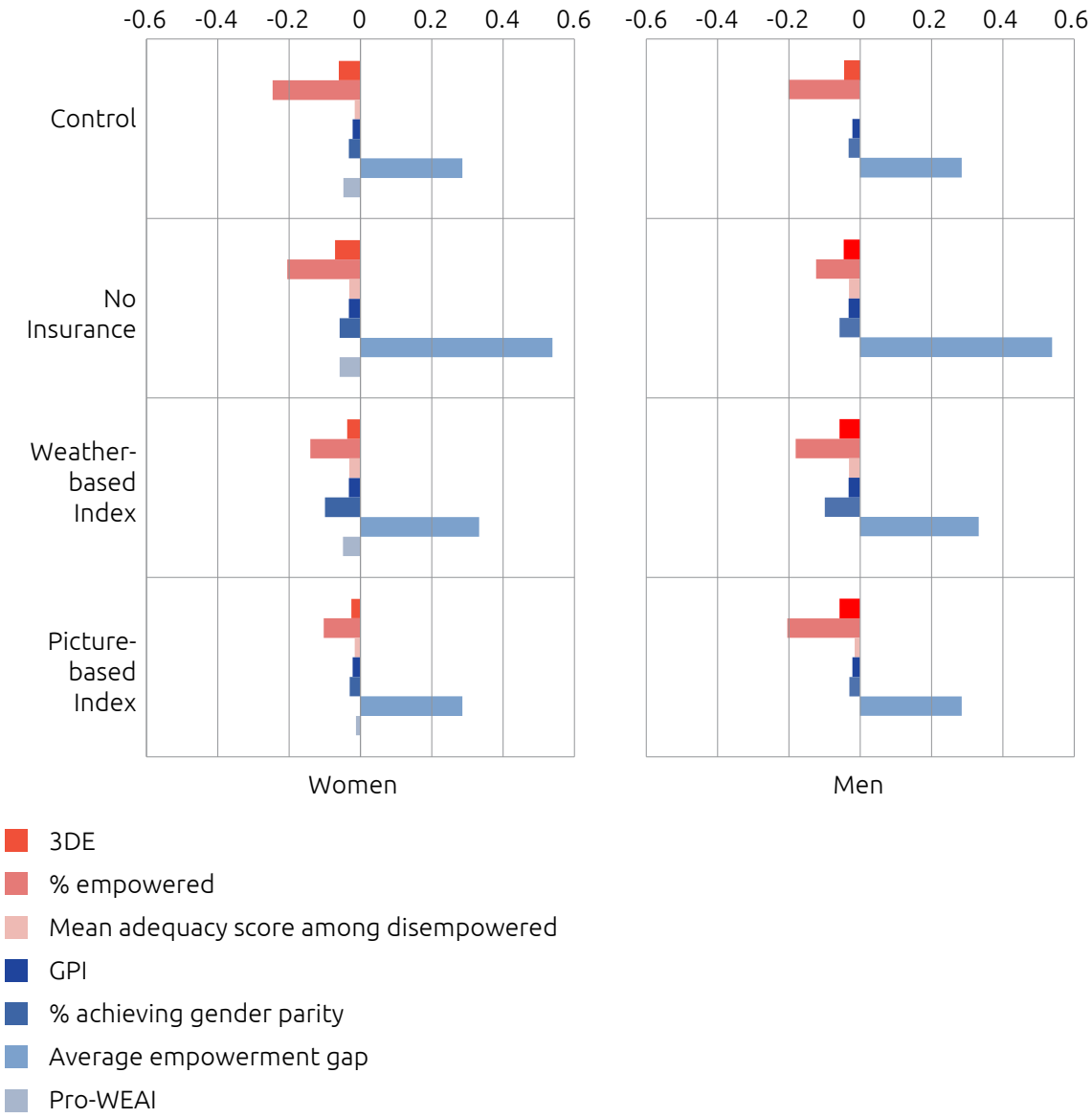


***Figure 3. ACRE Africa–KALRO: percent change in pro-WEAI aggregate indices***

*Note: None of the percentage changes are statistically significant.*

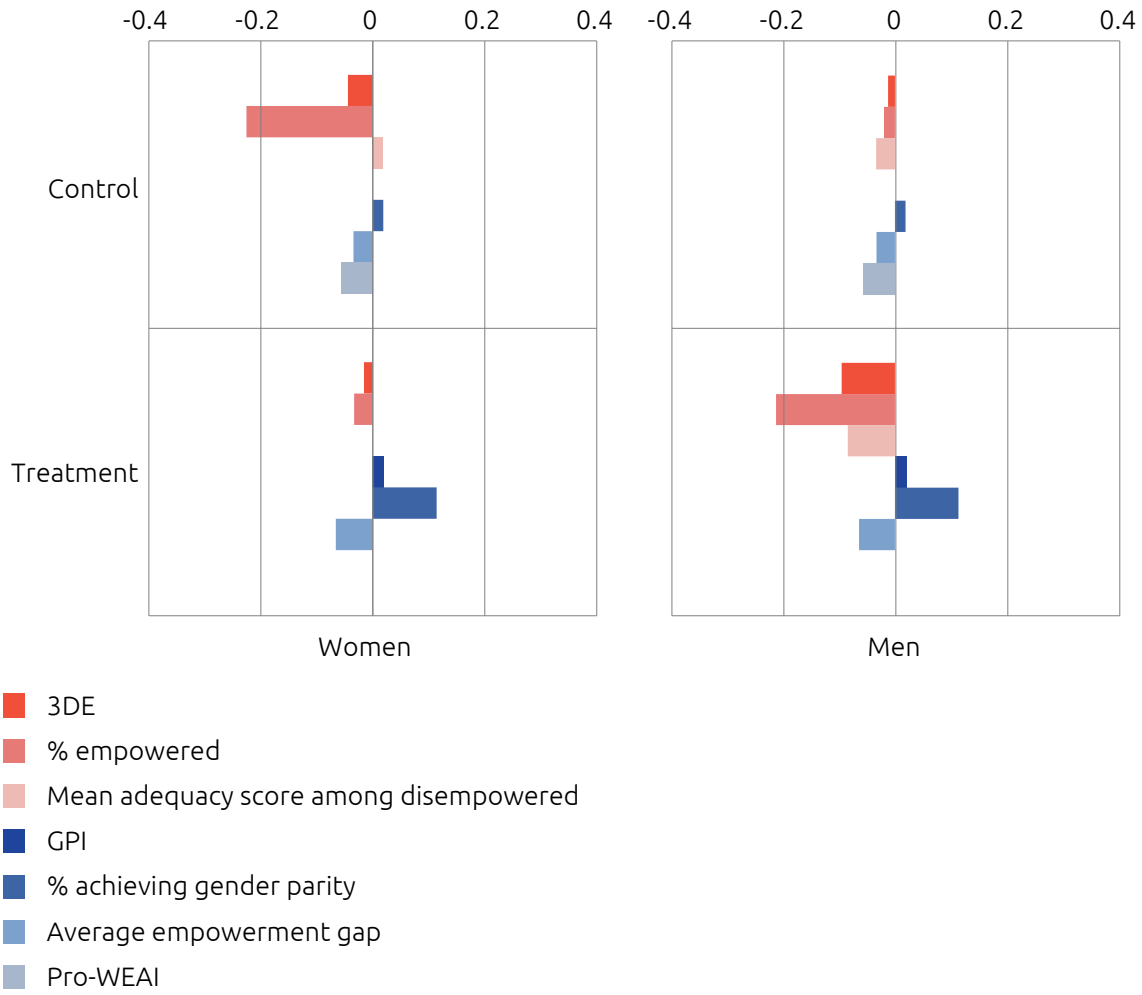


***Figure 4. NutriFish: Percent Change in Pro-WEAI Indices***

*Note: percent changes for % empowered for women in the control group, as well as 3DE, % empowered, and mean adequacy score among disempowered, for men in the treatment group, were found to be statistically significant at the α = 0.05 level*

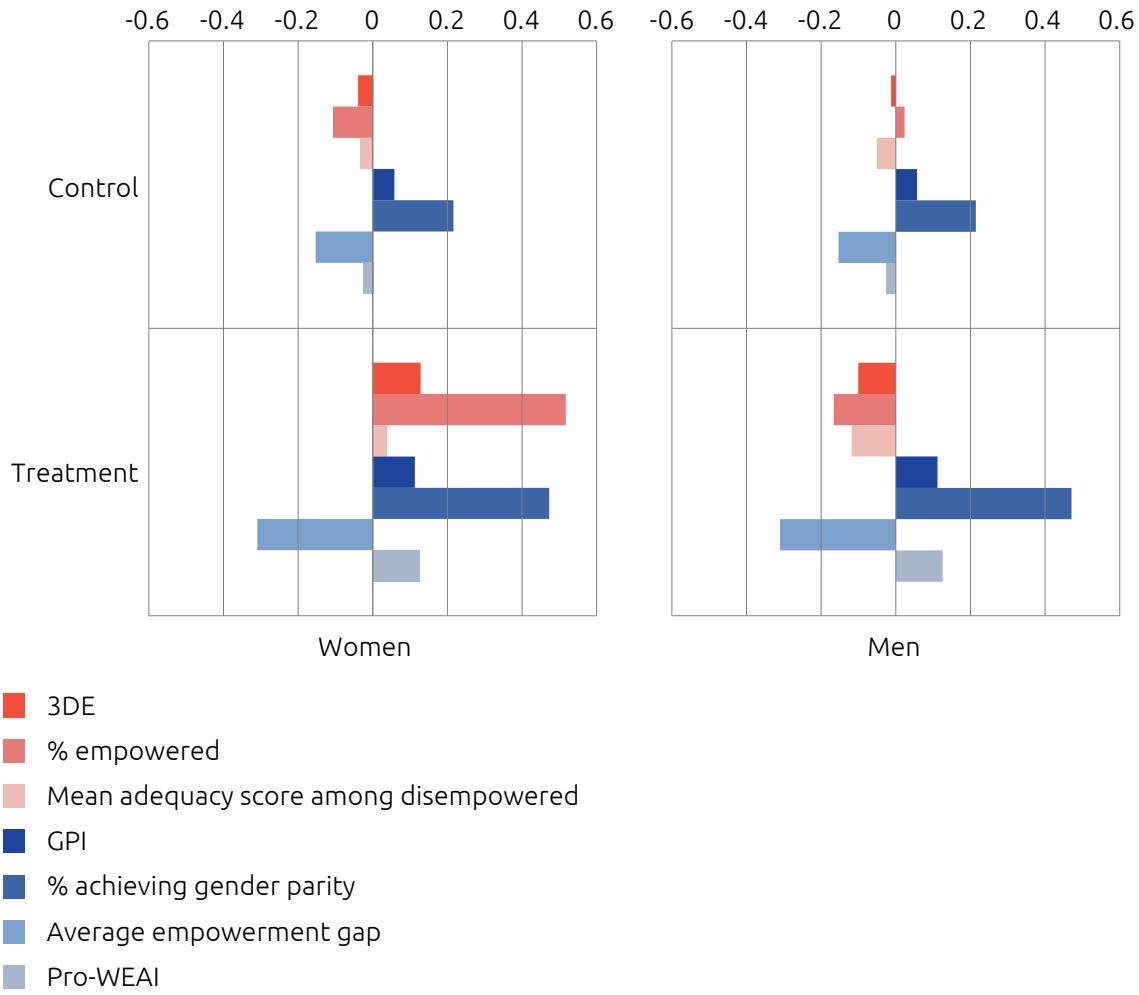


***Figure 5. Fisheries: percentage change in pro-WEAI aggregate indices***

*Note: Significance tests could not be calculated due to data availability.*

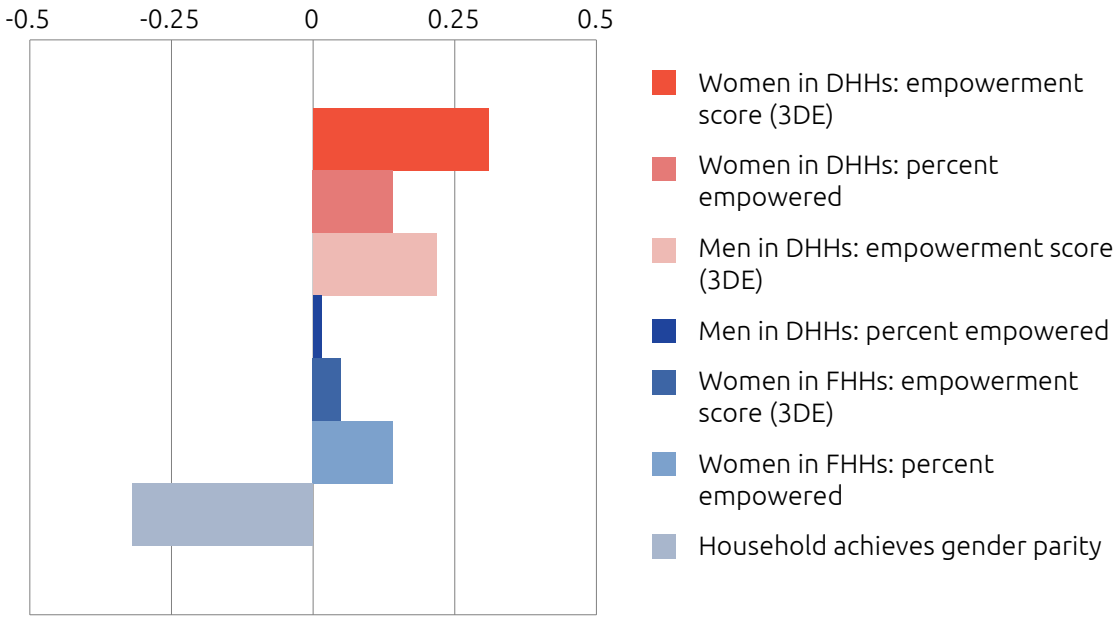


***Figure 6. IPM Mango: impact estimates***

*Note: impact estimates were not found to be statistically significant.*

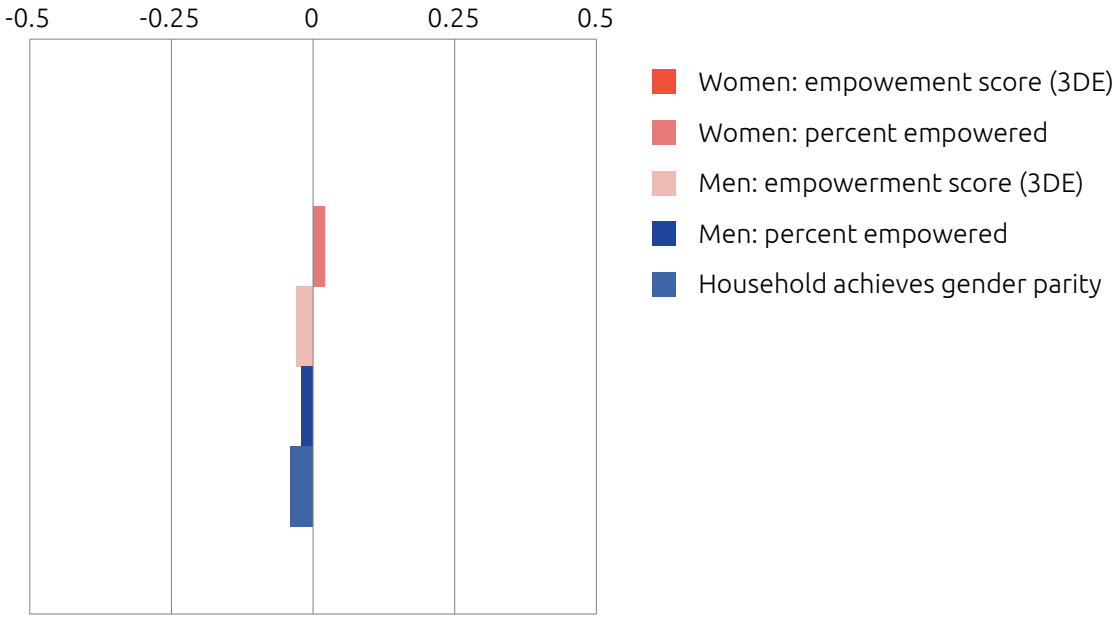


***Figure 7. NutriFish: impact estimates***

*Note: impact estimates were not found to be statistically significant.*

## *4.2 Synthesis of quantitative results from LVIF projects*

Of the four LVIF projects, only three had an explicit design for determining the causal impact of their interventions on key outcomes, mainly WELI aggregate indices. Women Rear used a community-randomized trial design, randomly assigning communities to two of its treatment arms (GAA and GTA+GAA treatments; the GAA treatment arm was considered as the "business as usual" arm) then randomly selecting individuals within each community as participants. The other two projects (GIVE and Advance), while falling short of using full randomization, used quasi-experimental designs. GIVE assigned some locations as "control" and others as "treatment", and then randomly selected villages and households that met the inclusion criteria for participation in the study. The selection criteria included being a dual-adult household (mainly husband and wife), having chickens and being willing to participate in the study. Advance did not establish the control and treatment groups for the baseline survey, choosing to use a "before (baseline)" and "after (endline)" comparison. The fourth project, SheVax+, conducted a quantitative baseline survey using WELI but did not conduct an endline survey, making it the only project that did not have an explicit design for quantitatively determining the causal impact of their interventions on the empowerment-related WELI aggregate indices. Consequently, while the three projects (Women Rear, GIVE and Advance) implemented some form of impact evaluation, we only present a meta-analysis of two projects: Women Rear and GIVE.

Figure 8 and Figure 9 show results from evaluating changes in aggregate index values by calculating the difference between the index values at baseline and endline, and testing the significance of the difference using a two-sample t test, which compares two datasets. In this case, mean, standard deviation and number of observations from baseline and endline were analyzed to determine if their means are statistically different. Figure 8 and Figure 9 show results that compare the percentage change (difference between aggregate index values of different index metrics) for men and women in different treatment groups over time.

The percentage change in WELI aggregate indices, from baseline to endline, for Women Rear is presented in Figure 8. In Women Rear analysis, a negative change was observed over time in the empowerment score and percent empowered for both women and men. However, the negative impact was not statistically significant, except for the negative

impact on gender parity, and that significance was not strong ($p < 0.1$). The negative change in 3DE scores for men and women in the "control" group (GAA), although not statistically significant, was relatively higher than that for those in GTA+GAA treatment group. Overall, in Women Rear, men were generally more empowered, judging from the 3DE and percent empowered results, and experienced comparatively lower negative percentage change in empowerment metrices. We also observed that women in GTA communities experienced comparatively lower percentage negative change in 3DE and percent empowered compared to women from GAA communities.

In GIVE, men experienced higher positive changes in empowerment compared to women, except for 3DE in treatment group 2 (T2) (Figure 9). Women in T2 had higher positive changes in empowerment compared to women in treatment group 1 (T1) and the control group.

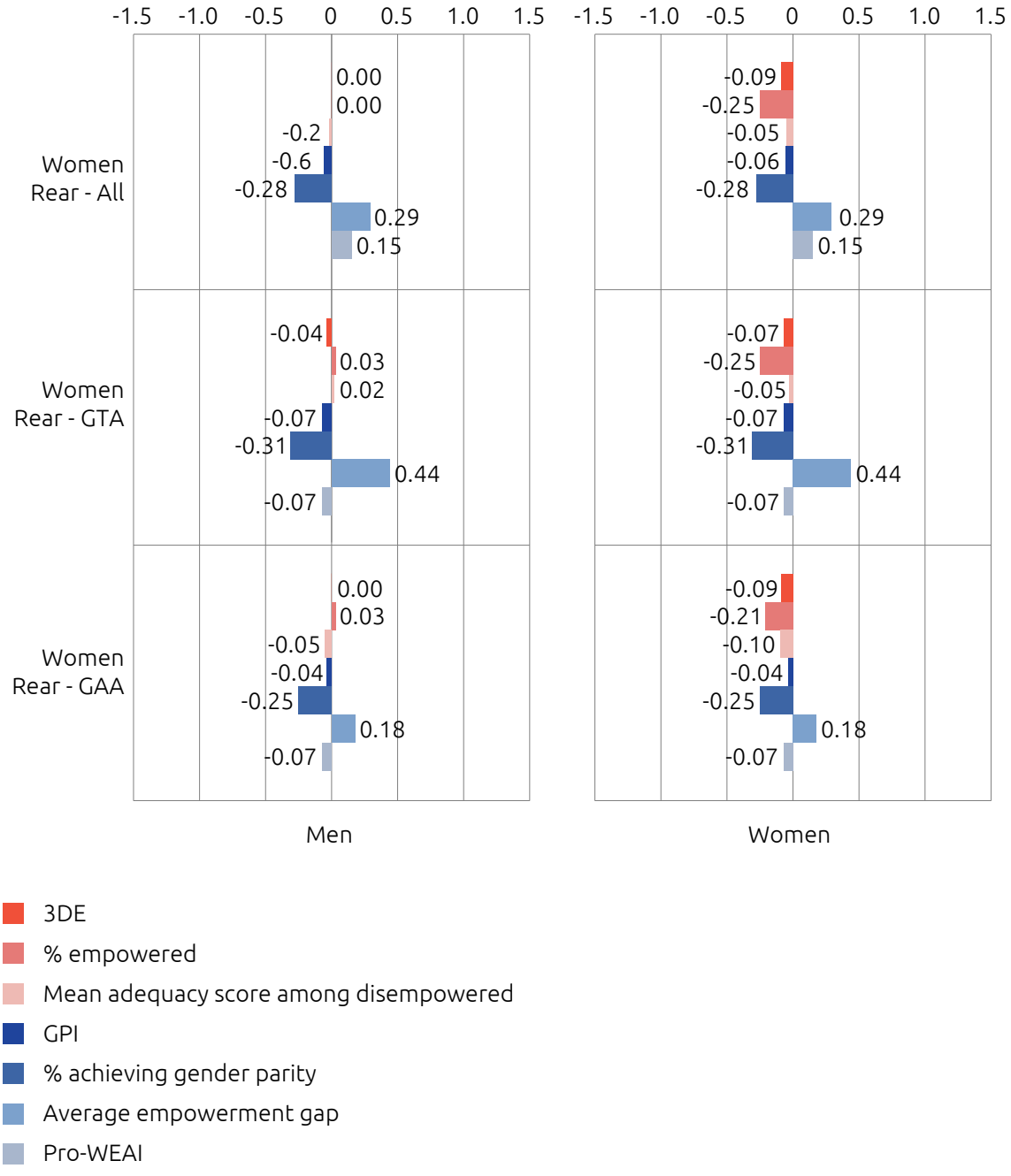


*Figure 8. Women Rear: percentage change in WELI aggregate indices*

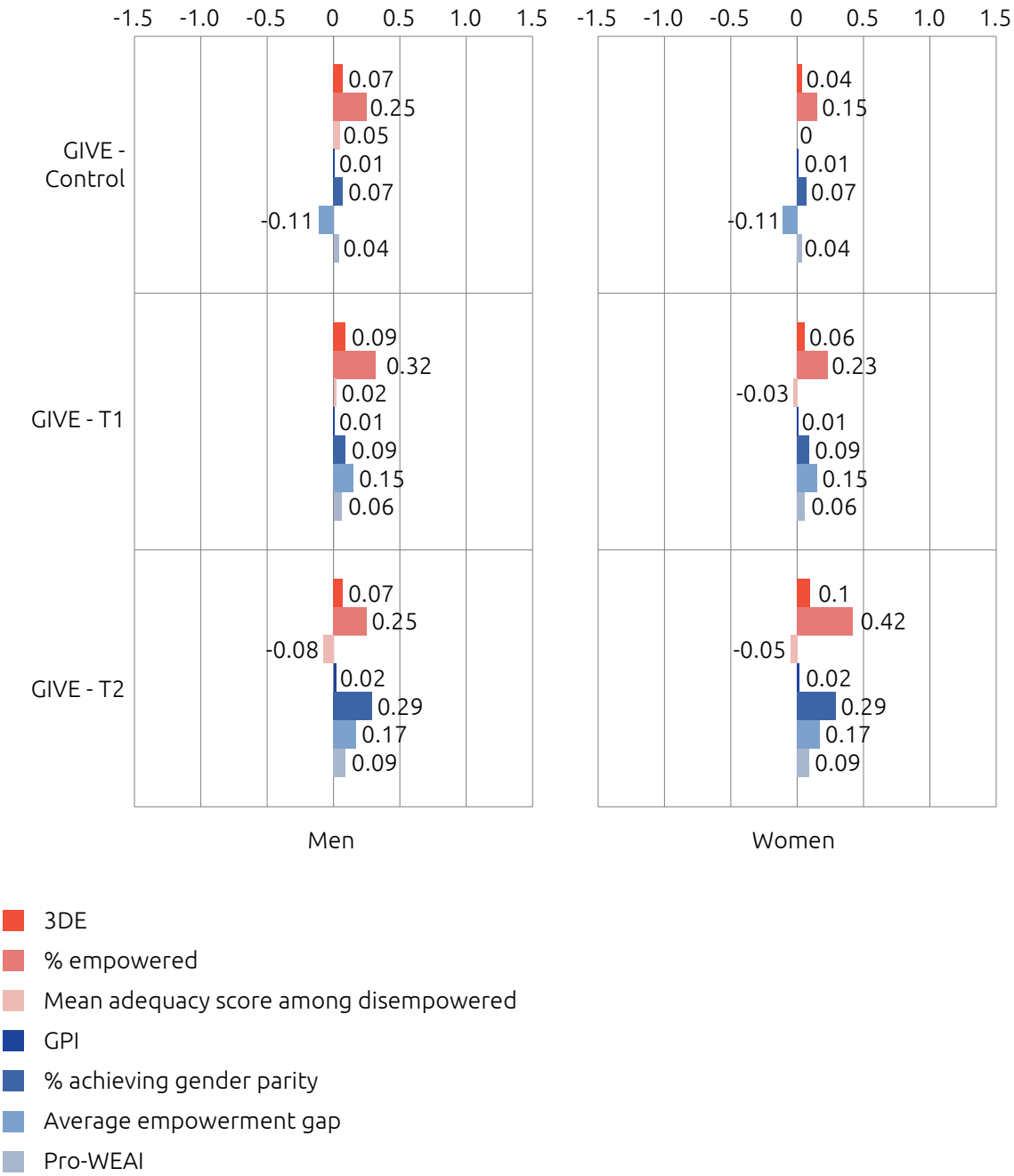


***Figure 9. GIVE: percentage change in WELI aggregate indices***

Expanding on the GIVE analysis of the magnitude of change over time, we observe a positive change on the empowerment score of both men and women from project interventions (Figure 10). The positive change was statistically significant at 1% (i.e., $p < 0.01$) for all the aggregate indices, including the impact on gender parity. The empowerment of men significantly increased from baseline to endline in all three treatment arms. For men, the increase in 3DE in T1 was greater than the increase in the control group, while the increase in 3DE for T2 was the same as the increase in the control group. The same trend was observed for the change in the percentage of men achieving empowerment. This indicates that the project interventions produced a positive impact for men in T1. For women, the increase 3DE in T2 was greater than the increase in the control group and the increase in 3DE for T1 was higher than the increase in the control group but lower than the increase in T2. The same trend was observed for the change in the percentage of women achieving empowerment and the percentage of women achieving gender parity. This indicates that the project interventions produced the highest positive impact for women in T2 compared to T1). T2 interventions consisted of chicken husbandry and training of members of groups (collectives),

trained community vaccinators and subsidized vaccines. T2 interventions consisted of similar interventions to T1 except instead of subsidized vaccines, free vaccines were provided in T2 (these interventions were implemented in Kibwezi East subcounty, Kenya).


***Figure 10. GIVE: percentage change in selected empowerment of women and men***

Although the two LVIF projects, Women Rear and GIVE, had some form of impact design, quantitative impact estimates were only reported for GIVE. Figure 11 shows results from a difference-in-difference analysis. The intervention had an overall positive impact on the empowerment score, percentage of empowered women and gender parity in both treatment groups. However, the project reported negative impacts on men's 3DE score for T2. The impact for women was greater in T2, while for men the impact, although lower than the magnitude of the impact on women, was greater in T1 compared to T2. Only the impact on gender parity was strongly statistically significant ($p \leq 0.01$) in T2. The impact percentage of empowered women was statistically significant at $p \leq 0.10$ for women in T2.


***Figure 11. GIVE: impact estimates***

*Note: only the impact on gender parity was found to be statistically significant ($p \leq 0.01$) in T2.*

## *4.3 Synthesis of qualitative results from LVIF and CultiAF projects*

The qualitative findings from five CultiAF projects (ACRE Africa–KALRO, FASIMO, Precooked Beans, NutriFish and IPM Mango) and three LVIF projects (Women Rear, GIVE and SheVax+) are reported based on our three qualitative sub-questions.

a. *What were the local conceptualizations of empowerment captured by the projects?*

At baseline, the projects explored three considerations associated with empowerment: (1) How do you know that someone is empowered?, (2) How can empowerment be reached? and (3) What are the necessary personal attributes to become empowered?. According to the respondents, an individual's empowerment is evident through their resource ownership, economic independence and independent decision-making—albeit with some context-specific variations. For example, in several projects, both women and men related empowerment to women's ability to own property and resources such as houses, crops, land, livestock or businesses. In a livestock project where women were not allowed to engage in livestock (by local norms), women spoke of empowerment as their ability to engage in income-generating activities independently of men. Another project reported that women's bargaining power in the household, which they included as a component of empowerment, depended on their own economic enterprises and asset ownership, and thus was relatively low. In another project, men viewed women's empowerment as their ability to support their husbands by paying children's school fees, buying food or meeting other household needs. Gender-based variations showed the relational nature of (economic) empowerment, that is an individual's empowerment depended on the way they related financially to others. Women tended to refer to their economic empowerment as ability to support their families "independently" of men, while some men noted their own economic empowerment as their ability to support themselves, their wives and family financially, while others said an empowered man is a man who allows his wife to engage in economic activities independently.

The drivers mentioned as being necessary for empowerment were focused on both self (human capital) and relations (social capital). Both women and men referred to the need to become strengthened, uplifted and motivated as human capital is necessary to achieve economic independence; others, particularly men, referred to the need to "come together

and support one another" or "belonging to a group" as the social capital needed for empowerment. In some cases, these drivers were also considered to be "manifestations of empowerment" in their own right. For example, "belonging to a group" was both a means to get empowered and a manifestation of being empowered. Women considered groups as critical avenues for uplifting each other emotionally and financially through informal credit and savings. The findings may therefore suggest that the men saw the value of such groups for the empowerment of women and wanted to leverage these groups for their own empowerment. This can indicate that (1) groups were seen by both women and men as an effective way to support women's empowerment, and (2) men also desired their empowerment to be supported (most projects used groups to support women's empowerment).

When it comes to personal attributes needed for a person to be empowered, both women and men mentioned physical strength and health, but only women also referred to being resilient, hardworking, focused, diligent, kind and clean. Older women in one project referred to being married as a necessary condition for women to be empowered, explaining that through marriage young women could access productive assets. On the other hand, women in another project considered marriage an obstacle to empowerment because men would restrict the freedom of their wives. Another project echoed this belief, saying that while married women had to ask for permission to attend training, single women had more freedom.

b. *Did the conceptualization of empowerment change in the lifetime of the project? If so, how?*

Conceptualizations of empowerment did not change substantially between baselines and endlines of projects. Major changes mostly related to the fact that, at baselines, women and men referred to empowerment as "aspirational" while at endlines they considered it "their own lived experiences". That is, at baselines they mentioned that women *would be* empowered *if they were* allowed to engage in livestock, while at endlines they referred to women *being* empowered *because they engage* in livestock. Some of the women from one project mentioned three new "proxies" of empowerment: (1) ability to participate in markets, (2) ability to support their husbands financially and (3) ability to take on roles previously performed by men. "Ability to support their husbands financially" can be interpreted as women's increased financial self-sufficiency and ability to contribute to the household. These women explained that their ability to contribute to their family's economy made their husband appreciate them beyond their role in bearing children. "Ability to take on roles previously performed by men" can be explained with the project intervention that supported women's engagement in livestock activities, which were previously the domain of men only. In a project that focused on supporting co-operatives, at the endline, women mentioned their ability to collectively purchase inputs and market livestock outputs. Two new proxies of empowerment mentioned by men in another project at the endline were "family headship" for men, and "seeking men's permission" for women. The fact that "family headship" was a new proxy of men's empowerment identified at endline by men respondents might indicate the feeling of disempowerment experienced by the men as their wives became more empowered: at endline a man was considered empowered *if* he was the head of the household (at baseline a man being the head of the household was taken for granted). Similarly, it can be inferred, that women at baseline were not allowed to take on men's roles. At endline, on the other hand, women could take on men's roles (because of the intervention) and in doing so, they could only be empowered *if* they asked men for permission to do so. This seems to suggest that for the men respondents, women's empowerment is conditional to their abiding by traditional gender roles of "good wife" (who seeks husband's permission) as shown by Njiru et al. (2024). Or perhaps this proxy is aspirational by the men: now that women have taken on men's roles and men's authority feels threatened, as shown above, they wish women to ask permission from their husbands.

c. *Did project participants experience any changes in their lived empowerment (beyond conceptualizations)?*

According to both women and men, the changes in empowerment experienced by women in their daily lives were profound. Some women mentioned that after the project, they enjoyed greater self-confidence and respect within their households and communities. Other women talked about becoming empowered through knowledge and skills, and their increased ability to use labor-saving technologies. For instance, after a project introduced fish-processing technologies, women allocated to the project spent less time processing fish and more time on other productive activities, which they found beneficial. In two other projects, membership in social networks and groups enabled women to support each other emotionally and financially, thereby improving their household welfare, property acquisition and social ties. Other women spoke of "achieving economic independence" through their "newly found" ability to rear and sell livestock independent from their husbands, which gave them the ability to meet their own and family needs, subsequently improving their empowerment and livelihood. The ability to access livestock vaccines also led to improved herd health and reduced mortality of animals under their care, which resulted in women's ability to make independent decisions or co-decisions with spouses. Finally, some women said that they felt empowered when they successfully balanced their traditional roles (e.g., performing chores inside the household) with their "new roles" previously done by men (e.g., looking after and making decisions about livestock). The findings also show that, overall, informal teachings and sensitization among women and men brought about critical conscientization, which enabled them to question the gender norms that exacerbated inequalities and gender biases in their communities.

# 5. Discussion and recommendations

In this working paper we synthesized the women's empowerment achievements of a portfolio of agriculture- and livestock-related development projects.

We carried out a meta-analysis of both qualitative and quantitative findings shared by the projects, after implementing pro-WEAI and WELI tools, to answer the research question: What did the agriculture- and livestock-related development projects achieve in terms of women's empowerment? How does this aggregate at the project portfolio level? We used the findings of the meta-analysis to discuss the significance and key applications of the results for future policies, program implementation, extension work and other agriculture- and livestock-related interventions that aim to support women's empowerment.

The synthesis of the quantitative projects' findings shows mixed results; among projects that were tested for statistical significance, we find mostly null results. Some projects report positive impacts on both women's and men's empowerment, but also negative impacts on gender parity. This result suggests that men may be benefiting from the interventions more than women, leading to a widening empowerment gap. The two most common empowerment strategies used across all projects were "providing access to goods and services" and "building knowledge and skills through various types of trainings targeted to women beneficiaries".

A few projects show more worrisome trends, such as negative changes in both women's empowerment and gender parity, although these trends may not necessarily account for other confounding factors. In one case, a project reported a negative trend in women's quantitative empowerment and a positive trend in its qualitative exploration; further qualitative research to validate the findings and explore the contradiction with the quantitative findings showed how the negative quantitative score stemmed from disempowered women's illiteracy (in

relation to the interviews and surveys), limited mobility (to complete post-project interviews and surveys) and lack of confidence during interviews and surveys. These factors restricted women's capacity to significantly engage with the WELI tool, leading to misunderstandings and inaccurate responses (Njiru et al. 2024). This result points to the value of using a mixed-methods approach, where gaps in one approach can be explored further using another approach.

There are also some promising findings, such as those from GIVE that showed statistically significant impacts on women's empowerment. Given the nature of this project's intervention, this finding suggests that influencing gender norms and going beyond "business as usual" strategies could be effective. This approach is consistent with other synthesis studies of empowerment impacts that have used WEAI-based metrics in the GAAP2 and Joint Programme on Rural Women's Economic Empowerment (JPRWEE) portfolios (Quisumbing et al. 2024; Quisumbing et al. 2023). These studies show that projects must be very intentional and invest appropriately to be able to expect significant empowerment impacts. Light-touch interventions are unlikely to be sufficient.

While most projects had an explicit design for determining the causal impact of their interventions on key outcomes, only a few provided complete information, limiting our ability to conduct a quantitative meta-analysis. The quantitative meta-analysis encountered the limitation that rigorous impact estimates were lacking for the majority of the projects. Alternatively, we reported findings showing percentage change in empowerment indices from baseline to endline, but acknowledge these findings are not sufficient for interpreting the impact of the projects even if the projects had designs that allowed attribution. When reporting percentage change in empowerment indices, the quantitative meta-analysis faced the limitation that not all projects reported standard errors, meaning that these findings could not be tested for statistical significance. The lack of endline data or data for both treatment and control groups have been additional challenges for the quantitative meta-analysis.

The qualitative findings show that the projects successfully captured local conceptualizations of empowerment. This is important for two main reasons. It contextualizes self-determination—the nucleus of empowerment—for people in various livelihoods and contexts. Projects need to understand such conceptualizations and build their interventions on them, ensuring interventions are relevant and effective in supporting women's empowerment as locally understood and desired. Understanding local conceptualizations is essential to interpreting the quantitative results on women's empowerment that use universal indices such as the WEAI and WELI.

For local conceptualizations, resource ownership was an indicator of empowerment common to both women and men. A second indicator was "relations": for women, empowerment equaled to their ability to manage their finances independently of the men; in contrast for men, it was their ability to support other family members and, in some cases, allow women to be financially autonomous. The findings highlight women's aspirations for independence and men's desire to fulfil provider roles and be good family managers. They also show how both women and men felt that women's empowerment was strongly tied to men's support. Men, specifically, saw supporting their wives' independence as an achievement of an empowered man. These results reveal the complexity of gender dynamics and power relations in communities due to prevailing institutions and norms (what is commonly done (approved) and what is commonly disapproved). Projects, therefore, may need to appreciate how men's support of women's empowerment is possibly not unwanted by some men, but, rather, an aspiration. Projects may therefore leverage men's support for women's empowerment as a mutual goal, promoting men's empowerment to strengthen their support for women's empowerment (see also Galiè and Farnworth 2019 for a discussion on the relational nature of empowerment and the implications for projects). Additionally, results revealed that empowerment is driven by social capital, unity and personal attributes, as was the focus of most projects. In line with past studies, collective action and unity among households and communities facilitate an environment where gender norms can be renegotiated, and women's empowerment supported (Kumar et al. 2021). The emphasis on personal attributes

that can lead to empowerment of an individual is in line with past studies focusing on a capability approach that highlights the importance of physical abilities for achieving goals and leading fulfilling lives (Sen 1999). Attributes like hard work, bravery and diligence have also been linked to successful economic activities and personal development (Campos et al. 2017; Rapp-Ricciardi et al. 2018).

Finally, the fact that conceptualizations of empowerment were not very different between baselines and endlines could be considered a symptom of ineffective project interventions. However, at baselines, such conceptualizations were expressed as an aspiration, while at endlines they were expressed as a lived experience of empowerment, which indicates the impact of the project interventions. Similarly, at endlines respondents seemed to be more specific about the drivers of change for empowerment. This specificity highlights the need for high-quality, gender-qualitative analysis that allows project teams to engage deeply with communities to capture subtle, yet essential, changes in empowerment (Njiru et al. 2024).

From a methodological perspective, this working paper shows the importance of a systematic implementation of both qualitative and quantitative WELI and pro-WEAI tools to allow solid learnings on empowerment to emerge. While both tools were adopted by all the projects at their outset, only some projects were able to systematically implement the tools at both the baseline and the endline, and within a research design that allowed attribution of change to project interventions. One reason for this is that some projects were asked to adopt the tools after work plans and budgets had already been shaped; as a result, some teams may not have had the financial resources or capacity to implement the tools systematically. This also shows the tension between the need for systematic implementation of common research tools and designs by research organizations, and the different priorities and capacities that development projects may have. Collaborations across such diverse partners as in LVIF and CultiAF need to find a compromise for such tensions by ensuring a mutual understanding from the start of both the research and project objectives, and the requirements to achieve those objectives. We also acknowledge that integrating the same research tools at the beginning of projects is a necessary requirement. Assigning the human and financial resources that cover their implementation and associated analysis is essential.

We acknowledge the importance of evaluating gender and intersectionality in local conceptualizations of empowerment. However, this evaluation was not possible given that data was not systematically reported by the projects, which compromised our ability to properly identify gender and intersectional differences at meta-levels in both lived and conceptualized empowerment. Future research should focus on exploring the relationship between intersectionality and local empowerment concepts to provide deeper insights. This synthesis also revealed that for a meaningful and quality meta-analysis of portfolio projects, four levels of accuracy and accountability are needed: (1) projects need to produce scientifically sound data (addressing the challenges mentioned above); (2) projects need to share their data with the right detail and focus needed to answer research questions (for the meta-analysis) that may be slightly different from the ones originally adopted by the projects; (3) projects need to be able to share this detailed data with a second team of researchers (such as in this case) without fearing the risk of losing the ability to publish it separately; and (4) meta-analyses in themselves, require a high level of generalization that may result in the loss of project- and context-specific nuances and depths, and are intended to complement rather than substitute for the project-level studies. These four levels may need to be shared and discussed with projects involved in a portfolio, at the very beginning, to clarify expectations and enhance collaboration.

# 6. Conclusion

In this working paper we synthesized changes in women's empowerment achieved by a portfolio of agriculture- and livestock-related development projects. These projects belonged to two programs supported by IDRC and other funders: CultiAF and LVIF. Both programs aimed to support women's empowerment in agriculture and livestock systems, and measured progress through two comparable tools: pro-WEAI for agriculture-related projects and WELI for livestock-related projects.

Consistent with the emerging empowerment literature, the quantitative results show that projects that have explicit strategies to influence and transform gender norms to best support women's empowerment. Without intentional programming and appropriate levels of investment, projects do not make a significant difference. Qualitative findings show that the projects' impacts were indicated through conceptualizations of empowerment changing over the course of the projects from being expressed as an aspiration to being expressed as a lived experience, and through respondents becoming more specific on the drivers of change for empowerment. The synthesis also demonstrated that the quantitative and qualitative tools are complementary for capturing impact that materializes in nuanced ways.

Methodologically, the working paper emphasized the importance of portfolio projects with specific and aligned goals and consistent measurement tools for women's empowerment, the challenges of coordinating the objectives of research and development partners, the benefits of using both quantitative and qualitative methods, the importance of accurate and scientifically sound data and transparency about data ownership and accountability, the trade-off between nuance and synthesis, and the need for dedicated financial resources for systematic impact assessments, meta-analysis and synthesis.

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