

User Guide on the Project-level Women's Empowerment in Agriculture Index (Pro-WEAI)

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Introduction

This user guide was written by researchers from IFPRI to assist practitioners in implementing the project-level Women's Empowerment in Agriculture Index (pro-WEAI). This report is intended as a guidance piece that points out the most critical issues for consideration and good practices in the survey design, data collection, calculation, and analysis of the pro-WEAI. For more information on how the original WEAI and A-WEAI differs from the pro-WEAI, visit the [WEAI Resource Center](#). This guide will only cover the core pro-WEAI and not the pro-WEAI add-on modules. Independent instructional guides are being developed for each pro-WEAI add-on module.

This guide is organized in three parts. Part A provides details on how the indicators are defined and how the Three Domains of Empowerment Index (3DE), Gender Parity Index (GPI) and pro-WEAI are calculated. Part B covers issues related to survey design and data collection; Part C provides instructions on how to construct pro-WEAI using the Stata do files; and Part D provides guidance on how the pro-WEAI results can be presented, analyzed, and interpreted. Links to the pro-WEAI survey, do files, tables, and other materials are provided in the Annex. More information on administering the pro-WEAI and analyzing the results can be found on the [WEAI Resource Center](#).

History of the WEAI:

All existing versions of the WEAI measure women's empowerment and gender parity, but are modified for different purposes. Use the ["Choosing the right WEAI"](#) tool if you are not sure which version is right for your project.

- The original WEAI (Alkire et al. 2013) , released in 2012, is an aggregate index which reports empowerment in agriculture at the country or sub-national level. The WEAI is based on individual-level data collected by interviewing men and women within the same households. It is designed for use in population-based surveys.
- The abbreviated WEAI (A-WEAI) was released in 2015, and builds on the original WEAI (Malapit et al. 2017). It shortens interview length, in large part by reducing the number of indicators measured, and modifies questions that were difficult to implement in the field, while maintaining cross-cultural applicability. It is designed for use in population-based surveys.
- The project-level WEAI (pro-WEAI), released in 2018, measures women's empowerment in various types of agricultural and rural development projects (Malapit et al. 2019). Pro-WEAI also includes qualitative tools to help projects understand local definitions of empowerment. Additionally, it includes optional modules for measuring health and nutrition, as well as market inclusion. It is designed for measuring the empowerment impacts of interventions that aim to empower women.

Development of pro-WEAI:

The original WEAI was developed for population-based monitoring of the Feed the Future Initiative. Since then, both researchers and implementing organizations have undertaken broad and diverse adaptations of the WEAI, aiming to develop indices that focus on aspects of agricultural and rural livelihoods not covered by the original WEAI. Users expressed strong demand for a standardized and validated measure of women's empowerment that is useful for agricultural and rural development projects to assess the impact of their projects on women's empowerment, and to

focus on outcomes that could change over the typical two- to five-year project cycle. This need is especially acute for projects that aim to empower women, not just reach or benefit them (Johnson et al., 2018). Outcome indicators must also detect potential unintended negative consequences that could result from women's participation in such projects, such as backlash from men as a result of projects that specifically target and/or empower women (Heath 2013; McCarthy 2019) and increased constraints on women's time which may, in turn, negatively affect women's own health and nutrition as well as the health and nutrition of their children (Ruel, Quisumbing, and Balagamwala 2018).

To address this demand, pro-WEAI builds on the WEAI, but with more explicit links to empowerment theory and adapts it for use as a metric for measuring the impact of agriculture development projects on women's empowerment, as well as a diagnostic tool for tailoring such programs to specific settings or as a tool for measuring project impacts over time in a non-experimental setting. Malapit et al. (2019) describes how pro-WEAI was developed collaboratively with 13 agricultural development projects in Africa and South Asia as part of the Gender, Agriculture, and Assets Project, Phase 2 (GAAP2), and how the quantitative and qualitative data were collected to develop and validate pro-WEAI.

Both the WEAI and pro-WEAI are rooted in Kabeer's (1999, 2005) framework of empowerment, which describes empowerment as a process of change on the interrelated dimensions of resources, agency, and achievements and focuses specifically on measuring agency, or the ability of individuals to make strategic choices. Because well-developed methods already exist for collecting information on resources (e.g., Doss, Grown, and Deere 2008; GAAP 2014) and for achievements (outcomes) such as productivity, incomes, or nutrition, both WEAI and pro-WEAI focus on measuring agency, for which there are few, if any, standardized measures.² However, whereas the original WEAI had five domains of empowerment with 10 indicators that are organized thematically and are informed by what USAID identified as feasible for FTF programs to affect directly, pro-WEAI has 10 indicators mapped to three domains: intrinsic agency (power within), instrumental agency (power to), and collective agency (power with) (Table 1). These three aspects of agency reflect the generative types of power described above (Rowlands 1997; Ibrahim and Alkire 2007). Though these three aspects of agency are present in the earlier WEAI, they were not explicit. These theoretical links are strengthened in the pro-WEAI.

Based on the consistent negative perceptions of coercive agency (power over) that were revealed in the qualitative research, that type of agency is not included in the index. This exclusion is consistent with the observation by Rowlands (1997:11):

When power is defined as 'power over', then if women gain power it will be at men's expense. It is easy to see why the notion of women becoming empowered is seen as inherently threatening, the assumption being that there will be some kind of reversal of relationships, and men will not only lose power but also face the possibility of having power wielded over them by women.

² A complete impact assessment must also collect information about key resources (including various aspects of human and social capital), and achievements (e.g., other outcomes of interest such as nutrition, diets, output, technology adoption, etc.).

Table 1. Domains, indicators, and weights used in pro-WEAI

Domain	Indicator	Weight
Intrinsic agency	Autonomy in income	1/10 for each indicator
	Self-efficacy	
	Attitudes about intimate partner violence (IPV) against women	
Instrumental agency	Input in livelihood decisions	1/10 for each indicator
	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	

Table 2 lists the indicators included in pro-WEAI, compared to WEAI and A-WEAI. Note that while several indicators are shared or are similar between indices, the adequacy definitions for these indicators are often different. These differences are discussed in Section A2. Pro-WEAI includes three indicators of intrinsic agency: autonomy in income, self-efficacy and attitudes about IPV against women. It includes six indicators of instrumental agency: input in livelihood decisions, ownership of land and other assets, control over use of income, access to and decisions on financial services, work balance and visiting important locations. The collective agency domain is composed of one indicator: group membership. Seven out of the 10 indicators in pro-WEAI build on the original WEAI indicators with modifications, and three indicators (attitudes about IPV against women, self-efficacy, and visiting important locations) are new and stem from topics suggested by GAAP2 projects during the development of pro-WEAI. Each indicator is equally weighted³, and a person is defined as empowered if she or he is empowered in at least 8 of 10 indicators, or 80 percent.⁴

³ We opted for equal weighting because there was no a priori rationale for why some indicators would be more important than others. Although weights could be based on local priorities, investigating what those priorities are would be a separate research undertaking; weights that differ depending on location would also not permit comparability across a project portfolio. In the absence of a theoretical rationale for weighting some higher than others, and in the interest of simplicity and transparency, we give all indicators equal weights but performed sensitivity tests on various weighting schemes. These results are presented in Malapit et al. (2019).

⁴ The 80% cutoff was initially determined based on sensitivity analysis conducted comparing all possible cutoffs using all WEAI data available at the time. Similar analysis was done prior to the launch of pro-WEAI, which confirmed that this cutoff remained reasonable.

Table 2. Comparison of indicators across WEAI, A-WEAI and pro-WEAI

WEAI		A-WEAI		Pro-WEAI	
Domains	Indicators	Domains	Indicators	Domains	Indicators
Production	Autonomy in production Input in productive decisions	Production	Input in productive decisions	Intrinsic Agency	Self-efficacy Attitudes about IPV against women Autonomy in income Input in livelihood decisions
Resources	Purchase, sale, or transfer of assets Ownership of assets Access to & decisions on credit	Resources	Ownership of assets Access to & decisions on credit	Instrumental Agency	Ownership of land and other assets Access to & decisions on financial services Control over use of income Visiting important locations Work balance
Income	Control over use of income	Income	Control over use of income		
Time	Workload Leisure	Time	Workload		
Leadership	Group membership Speaking in public	Leadership	Group membership	Collective Agency	Group membership

Part A: Pro-WEAI Domains and Indicators

For pro-WEAI, each indicator is designed to measure whether the respondent reached a certain threshold (has adequate achievement) with respect to the indicator. In this section we look at each domain and indicator within pro-WEAI in detail, including how the indicator is calculated and which survey questions are used for each indicator. We discuss allowable adaptations to each indicator and the overall pro-WEAI. We outline how each indicator compares to analogous indicators in the WEAI and A-WEAI. Finally, we cover the calculation of the 3DE, GPI and pro-WEAI.

For pro-WEAI indicators that are similar to indicators in previous versions, please note that the adequacy thresholds have been systematically adjusted to be stricter. This shift in philosophy is due to the primary focus of pro-WEAI on impact evaluation and the desire to hold agricultural and rural development projects aimed at increasing women's empowerment and gender equality to a higher standard, relative to previous versions of WEAI that focused on population-based monitoring.

A1.Domains and Indicators of pro-WEAI

Domain 1: Intrinsic Agency

To capture the individual's intrinsic agency, three indicators are used: *autonomy in income*, *self-efficacy*, and *attitudes about intimate partner violence against women*. The original WEAI included an indicator for *autonomy in production*, based on a series of structured survey questions. This indicator was dropped from A-WEAI because the questions were difficult for respondents to understand. The *autonomy in income* indicator in pro-WEAI utilizes an improved methodology for collecting data on autonomy using vignettes .

Autonomy in income

This indicator is based on the *autonomy in production* indicator in the WEAI but now focuses exclusively on the use of income generated from agricultural and non-agricultural activities and uses vignette-based questions. To measure autonomy in income in the pro-WEAI we use the Relative Autonomy Index (RAI). The RAI is a measure of motivational

autonomy developed by psychologists Richard Ryan, Ed Deci, Valery Chirkov and others (Chirkov, Ryan, and Deci, 2011; Ryan and Deci, 2000, 2012). They developed the index within the context of the Self-Determination Theory. The index directly measures an individual's ability to act on what he or she values, it is a measure of internal and external motivations that determine a person's decisions. In the case of pro-WEAI the measure is computed with reference to autonomy in how an individual spends his or her income.

We read respondents short vignettes about reflecting different motivations for how income generated from agricultural and non-agricultural activities is used. Following each vignette, we ask if the respondent is like or not like the person referred to in the vignette. The names of the individuals in the stories are adapted to local context and are male/female to match the sex of the respondent. In addition, the order of the questions is randomized. The three vignettes are as follows: D2) external motivation: "[PERSON'S NAME] uses her (his) income how another person tells her (him) she (he) must use.", D3) introjected motivation: "No one tells [PERSON'S NAME] how to use her (his) income. But, she (he) uses her (his) income in the way that her (his) family or community expects." D4) autonomous motivation: "[PERSON'S NAME] chooses to use her (his) income how she (he) personally wants and thinks is best."

The Relative Autonomy Index (RAI) is calculated using the following formula: $(\text{external motivation} \times (-2)) + (\text{introjected motivation} \times (-1)) + (\text{autonomous motivation} \times 3)$. Therefore, in order to be adequate an individual must have an RAI score of at least 1. This is equivalent to reporting autonomous motivation and either external motivation or introjected motivation, but not both. For example, if an individual displays autonomous motivation and external motivation her RAI score will be 1 $(3-2)$ and she will be considered adequate $(\text{RAI} \geq 1)$. Alternatively, if she displays autonomous motivation and introjected motivation her RAI score will be 2 $(3-1)$ and she will also be considered adequate. However, if she displays autonomous motivation, external motivation and introjected motivation her RAI score will be 0 $(3-2-1)$ and she will not be considered adequate.

Adaptations:

All three required stories need to be included without changes made to the wording in order for this indicator to be calculated. However, it is possible to add the vignette representing amotivation: "There is no alternative to how [PERSON'S NAME] uses her income. How she uses her income is determined by necessity". Information on amotivation is not used to calculate adequacy, but may help identify whether the respondent considers use of income an area where she cannot exercise agency.

Self-efficacy

This indicator is not included in the WEAI or A-WEAI. To measure self-efficacy in the pro-WEAI we use the New General Self-Efficacy Scale (NGSE). The NGSE is a cross-culturally validated scale to measure self-efficacy, or a person's perception of their capabilities and ability to reach their goals (Chen et al., 2001). We ask respondents to think about how each statement relates to their life and indicate if they strongly disagree, disagree, neither agree nor disagree, agree or strongly agree with the statement. The four statements are: 2) When facing difficult tasks, I am certain that I will accomplish them, 3) In general, I think that I can obtain outcomes that are important to me, 6) I am confident that I can perform effectively on many different tasks, and 8) Even when things are tough, I can perform quite well.⁵

⁵ The omitted numbers, 1, 4, 5, and 7 reflect optional statements.

For each statement that an individual strongly disagrees with they are given a score of 1. If they disagree, they are given a score of 2, neither agree nor disagree receives a score of 3, agree receives a score of 4 and strongly agree receives a score of 5. The scores for each of the 4 statements are then summed to get the final score. For example, if an individual strongly agrees with all 4 statements they will have a score of 20 (4x5). In order to be adequate in *self-efficacy* a respondent must have a New General Self-Efficacy Scale score of at least 16. This is equivalent to an average response across the statements of “agree.”

Adaptations:

No adaptations can be made to the 4 statements used in the NGSE, and all 4 statements must be included. The response options may be adapted to a three-point Likert scale instead of the five-point Likert scale used in the pro-WEAI. In this case the available options will be: disagree, neither agree or disagree, or agree. If they disagree they are given a score of 2, neither agree nor disagree receives a score of 3, agree receives a score of 4. The threshold for adequacy remains unchanged, an individual needs to agree with all 4 statements and have a New General Self-Efficacy Scale score of 16 to achieve adequacy.

Attitudes about intimate partner violence (IPV) against women

Attitudes about IPV against women is a new indicator that is not included in the WEAI or A-WEAI. GAAP2 projects showed strong support for the inclusion of an indicator centered on gender-based violence (GBV). Projects felt that the absence of violence is important to achieving agency, especially given how violence interacts with other areas of agency, as discussed above. In addition, increased IPV has been witnessed as an unintended consequence of women’s empowerment projects (Eves & Crawford, 2014). This gives extra importance to the inclusion of a measure of IPV as monitoring unintended consequences of a project is extremely important.

There are considerable ethical concerns about asking individuals about their own experience of IPV or GBV. In order to avoid causing harm or trauma we instead ask individuals about their attitudes towards IPV against women. The module used in pro-WEAI was developed by the DHS and has been fielded in many countries as a part of their surveys (DHS, 2017). In the module we ask individuals if, in their opinion, a husband justified in hitting or beating his wife in 5 different situations: 1) if she goes out without telling him, 2) if she neglects the children, 3) if she argues with him, 4) if she refuses to have sex with him, and 5) if she burns the food. Individuals may respond “yes”, “no” or “don’t know”. In order to be adequate in this indicator an individual must answer “no” (IPV is not justified) in all five situations.

Adaptations:

In contexts where situation 4, “if she refuses to have sex with him” cannot be collected we recommend that individuals be considered adequate if they answer “no” (IPV is not justified) in the remaining four situations.

Domain 2: Instrumental Agency

To capture the individual’s instrumental agency, six indicators are used: *Input in livelihood decisions, ownership of land and other assets, access to and decisions on financial services, control over use of income, work balance, and visiting important locations.*

Input in livelihood decisions

The indicator *Input in productive decisions* is included in the WEAI and A-WEAI. This indicator was modified to include non-agricultural decisions in the pro-WEAI and was thus renamed *input in livelihood decisions* to reflect this inclusion of non-agricultural activities. The threshold for adequacy in this indicator has been changed from the threshold used in WEAI, in which a respondent is considered adequate if he or she has some input in decisions, makes the decision, or feels he or she could make it to a medium extent if he or she wanted to in at least two different activities. In pro-WEAI, the adequacy threshold for this indicator has been raised, and now requires that the respondent must have some input in decisions, make the decision, or feel that she could make decisions to at least a medium extent if she wanted to for each activity that she participates in. In other words, a woman must be able to exercise choice in all economic activities in which she participates in order to be considered adequate.

The indicator is constructed from several questions regarding the following activities: staple grain farming, horticultural or high value crop farming, large livestock raising and processing, small livestock raising and processing, poultry raising and processing, fishing or fishpond culture, non-farm economic activities, and wage and salary employment. Respondents were asked whether (1) they participated in each activity in the past year; (2) if they did participate in said activity, who in the household normally makes decisions regarding that activity; (3) if they report multiple decision makers, how much input they personally had in making decisions about the activity and; (4) to what extent they feel as though they could participate in decisions regarding the activity if they wanted to. The specific questions can be found in Annex 1 of this paper (Module G2, question G2.01-G2.04). Although these categories may be modified to reflect the local context, the same analytical procedure will apply.

The answer scale for the question regarding input in decisions is: 1 = little to *no input in decisions*, 2 = *input into some decisions*, 3 = *input into most or all decisions*. For each activity, a sub-indicator is created that considers the individual adequate if he or she participates in that activity and has at least input into some decisions related to that activity.

For each type of decision, a sub-indicator is created that considers the respondent adequate if he or she makes the decisions or if the respondent feels that he or she could participate in the decision-making to at least a medium extent. The answer scale for the latter question, which pertains to the extent to which the individual feels he or she can participate in decisions, is: 1 = *not at all*, 2 = *small extent*, 3 = *medium extent*, and 4 = *to a high extent*.

All these sub-indicators are then aggregated into the indicator *input in livelihood decisions*. The respondent is considered adequate in *input in livelihood decisions* if she participates in at least one activity, and for every activity that the individual participates in, she has some input in decisions, makes the decision, or feels he or she could make it to a medium extent if she wanted to.

Adaptations:

Additional activities may be included in the questionnaire for this indicator to better suit a project's context. In addition, existing activities may be disaggregated and asked about separately. For example, instead of asking about small livestock raising, which includes sheep, goats, and pigs, you may ask about sheep, goats, and pigs separately. In the case of fishpond culture, if there is strong reason to suspect that very few respondents engage in fishpond culture, then it is permissible to omit this activity. However, other than fishpond culture, no activity may be omitted, and we do not recommend further aggregation of activities.

Ownership of land and other assets

In pro-WEAI, we consider *ownership of land and other assets* to be an indicator of instrumental agency, rather than a measure of resources in Kabeer's framework, because this indicator measures self-reported ownership, not externally recognized ownership. Qualitative research from pro-WEAI has repeatedly shown that agency is involved in realizing ownership and other rights over resources (Meinzen-Dick et al. 2019). For example, in Nepal, speaking of personal property (e.g., goats, small assets) classified as "pewa," women often spoke of "doing pewa" in an active sense, rather than more passively "having pewa" (Pradhan, Meinzen-Dick and Theis 2018). Hence, we argue that the act of claiming ownership over an asset is itself a reflection of instrumental agency. Prior quantitative analysis of the WEAI also supports this argument by revealing a high degree of correlation between self-reported ownership of an asset and a bundle of property rights associated with control over the asset, which were included in previous WEAI surveys (Malapit et al. 2017).

The ownership indicator examines whether an individual has sole or joint asset ownership of land and other productive assets, based on a comprehensive list of asset types (including agricultural land, large and small livestock, poultry, fishponds, farm equipment, nonfarm business equipment, house, large and small household durables, cell phone, nonagricultural land, and means of transportation). A person is considered adequate in this area if she reports having sole or joint ownership of land or at least three other assets.

First, for each type of asset we create an indicator to reflect whether anyone in the household currently has that type of asset. Then, these indicators are summed across assets, creating the indicator of household ownership, which measures the number of assets that the household owns across all asset types. Second, for each type of asset we create an indicator of an individual's ownership, which equals 1 if the individual, alone or jointly, owns any of that type of asset.

The asset-specific indicators are aggregated into the indicator of the respondent's *ownership of land and other assets*. According to this indicator, an individual is adequate in ownership if he or she solely or jointly owns either land or at least three other asset types. Individuals who live in households in which no type of asset are owned are considered inadequate in ownership.

Adaptations:

Additional assets may be included in the questionnaire for this indicator to better suit a project's context. In addition, existing assets may be disaggregated and asked about separately. For example, instead of asking about small livestock, which includes sheep, goats, and pigs, you may ask about sheep, goats, and pigs separately. Asset categories cannot be aggregated. Asset categories for which there is strong reason to suspect that very few respondents own can be omitted. However, this should rarely, if ever, be the case. For example, consider item D, which includes fishponds and fishing equipment. While fishponds may be extremely rare in some contexts, fishing equipment may still be owned and be important for rural livelihoods in these contexts.

Access to and decisions on financial services

This indicator is based on the *access to and decisions on credit* indicator in the WEAI, but the pro-WEAI definition adds access to financial accounts and, for households that did not use credit in the past year, whether they could have in pro-WEAI. This indicator examines decision-making about credit: whether to obtain credit and how to use the credit obtained from various sources. To have adequacy in this indicator, the individual must meet at least one of the following conditions: 1) belong to a household that used a source of credit in the past year and participated in at least one sole or joint decision about it, 2) belong to a household that did not use credit in the past year but could have if wanted to from at least one source, or 3) has access, solely or jointly, to a financial account.

First, the respondent is asked whether anyone in the household (including him/herself) would have been able to take a loan or borrow cash/in-kind if he/she wanted to for each source of credit. This question was not included in the original version of the WEAI but was added to the A-WEAI and pro-WEAI to distinguish between households that had access to credit but chose not to borrow, and households who wanted to borrow but were unable to do so (i.e., credit constrained households). Next, a sub-indicator is created, which assumes the value of 1 if the respondent lives in a household that has or could have taken a loan in the past 12 months from at least one of the potential sources of credit (nongovernmental organizations, formal and informal lenders, friends or relatives, group based micro-finance or lending, and informal credit/savings groups). Then, for each potential source of credit, types of decisions are aggregated into an indicator that assumes the value 1 if the respondent makes, alone or jointly, at least one of the two decisions considered—borrowing or how to use the credit—for that particular source of credit. Next we create a sub-indicator which assumes the value of 1 if the respondent lives in a household that has not taken a loan in the past 12 months from any source of credit but could have if they wanted to. Finally, the third sub-indicator takes on a value of 1 if the respondent has access, solely or jointly, to a financial account. These sub-indicators are aggregated across potential sources of credit, generating the indicator *access to and decisions about financial services*. The respondent is classified as adequate in the indicator if she is considered adequate (has a value of 1) in any of the three sub-indicators. Individuals who live in households that could not and did not use any source of credit, and did not have sole or joint access to a financial account, are considered inadequate in this indicator.

Adaptations:

Additional lending sources may be included in the questionnaire for this indicator to better suit a project's context. In addition, existing lending sources may be disaggregated and asked about separately. For example, instead of asking about informal credit / savings groups which includes merry-go-rounds, tontines and funeral societies, you may ask about merry-go-rounds, tontines and funeral societies separately. However, no lending sources may be omitted, and we do not recommend further aggregation of lending sources categories.

Control over use of income

An indicator for *control over use of income* is included in all three versions: WEAI, A-WEAI and pro-WEAI. However, the different versions have different requirements for adequacy. In the WEAI version of the indicator, to be adequate, a respondent has to demonstrate adequate input in decisions in **at least one** activity which she participates in. However, in pro-WEAI, the respondent must have input into decisions in **every** activity which she participates in. *Control over use of income* is constructed from answers regarding input into decisions about the use of income. Individuals are asked if they participated in any of the following activities: staple grain farming, horticultural or high value crop farming,

large livestock raising and processing, small livestock raising and processing, poultry raising and processing, fishing or fishpond culture, non-farm economic activities, and wage and salary employment.⁶ This indicator is captured in the same module as *input in livelihood decisions* so that information on participation is only captured once. For each agricultural activity the respondent participated in (i.e., excluding non-farm economic activities and wage and salary employment), they are asked how much input they have in decisions about how much of the outputs of the activity to keep for consumption at home rather than selling. For each activity the respondent participated in, agricultural or non-agricultural, they are asked how much input they have in decisions regarding how to use income generated from the activity.

The answer scale for the question regarding input in decisions is: 1 = *no input or input into very few decisions*, 2 = *input into some decisions*, 3 = *input into most or all decisions*. For each activity a sub-indicator is created that considers the individual adequate in input in decisions for that activity if she participates in that activity and has at least some input in how to use income generated from the activity and, for agricultural activities, at least some input in decisions related to how much of the outputs of the activity to keep for consumption at home rather than selling. In other words, a respondent must have input in how to use both output and income to be considered adequate.

For non-agricultural activities such as non-farm economic activities, and wage or salary employment, where there is no agricultural output an individual needs only to have input in decisions related to the use of income generated.

Then, all these sub-indicators are aggregated into the indicator for *control over use of income*. The respondent is considered adequate in *control over use of income* if she is considered adequate in all of the activities that she participates in.

Adaptations:

Additional activities may be included in the questionnaire for this indicator to better suit a project's context. In addition, existing activities may be disaggregated and asked about separately. For example, instead of asking about small livestock raising, which includes sheep, goats and pigs, you may ask about sheep, goats and pigs separately. In the case of fishpond culture, if there is strong reason to suspect that very few respondents engage in fishpond culture, then it is okay to omit this activity. However, other than fishpond culture, no activity may be omitted, and we do not recommend further aggregation of activities. In addition, no changes can be made to the answer scale for the question regarding input in decisions.

Work Balance

Work balance refers to the allocation of time to paid work and unpaid domestic and care work activities, based on time-use data collected in a 24-hour recall time diary. Qualitative results from pro-WEAI showed that work balance was not explicitly mentioned as an aspect of empowerment, but excessive workloads were discussed as limiting women's ability to do many other things, including attending group meetings or earning income (Meinzen-Dick et al. 2019).

⁶ Major and minor household expenditures are excluded from this question because they are not income-generating activities

The original WEAI time diary collected time spent in secondary tasks, but our analysis suggests that individuals who were time poor were classified as time poor regardless of whether we counted secondary activities (Malapit et al. 2017). For this reason, secondary activities are no longer required for the A-WEAI time diary, and are limited to childcare in the pro-WEAI time diary. It is important to note that this change did not save much time in implementation. The original WEAI also included a second indicator measuring respondents' satisfaction with leisure time, which is no longer included in the A-WEAI and pro-WEAI.

The primary productive and domestic workload amount of time devoted to paid work and unpaid domestic and care work activities is derived from a detailed 24-hour time diary in which respondents are asked to recall time spent on primary activities in the last 24 hours starting at 4:00 a.m. on the day before the interview. Although the time diary is recorded in 15-minute increments, the time diary interview should be conducted as a continuous narrative, in which respondents are asked about the activities they participated in and what time each activity started and ended. The enumerator then chooses a time to the closest 15 minutes to record as a start and end time for each activity. The time diary interview begins with the enumerator asking the respondent to recall what time he or she woke up and went to sleep the previous day; this establishes the boundaries for the time period that must be "filled in" during the interview and reduces the risk that the amount of time recorded in the diary exceeds or falls below 24 hours or that an activity is accidentally omitted. Next, the enumerator asks the respondent what they did immediately after waking up and for how long. The interview moves from one episode to the next, until a full account of the respondent's day is captured. The enumerator's primary task throughout the interview is to "translate" the respondent's narrative of the previous day into pre-specified activity codes. Twenty-four activities are included, covering domestic and care work, productive activities, social activities, leisure, and resting.⁷ To increase the salience of certain types of childcare, the pro-WEAI time diary utilizes 'priming.' Prior to the start of the time diary interview, respondents are read a passage that provides examples of childcare, including tasks undertaken while doing some other activity, and those involving both physical and supervisory care. In addition, respondents are probed about doing childcare throughout the interview. Following each episode of activity, respondents are asked whether they also cared for children while doing the activity. Otherwise, enumerators are encouraged to avoid interrupting the respondent unless absolutely necessary. For instance, if the respondent reports weeding her rice paddy, the enumerator seamlessly codes this as "staple grain farming" without interrupting the narrative.

The amount of hours worked is defined as the sum of the time the individual reported spending on work-related tasks as the primary activity and half the amount of time the individual reported spending on childcare as a secondary activity (i.e. $\text{Workload} = \text{time spent in primary activity} + (1/2) \text{time spent in childcare as a secondary activity}$). The definition of work-related tasks includes wage and salary employment, own business work, farming, construction, shopping/getting service, fishing, weaving/sewing, textile care, cooking, domestic work, caring for children/adults/elderly and commuting. The individual is defined as adequate in workload if the number of hours he or she worked per day is less than the time poverty line of 10.5 hours in the previous 24 hours. This cut-off was derived using available WEAI data, and re-

⁷ The pre-specified codes include the following activities: sleeping and resting; eating and drinking; personal care; school (including homework); work as employed; own business work; staple grain farming; horticultural (gardening) or high-value crop farming; large livestock raising; small livestock raising; poultry and other small animal raising; fishpond culture; commuting (to/from work or school); shopping/receiving service (including healthcare); weaving, sewing, and textile care; cooking; domestic work (including fetching water and fuel); caring for children; caring for adults; traveling (not for work or school); exercising; social activities and hobbies; and religious activities, plus an open-ended "other (specify)" option for non-specified activities.

evaluated using pro-WEAI data, using a methodology similar to that of Bardasi and Wodon (2006), i.e., roughly equal to 1.5 times the median of the total individual working hours distribution. While we recognize that the past 24 hours may not adequately represent individuals' time allocation, especially in agricultural settings, alternative time-use data collection methods are often less accurate, more cognitively burdensome, and/or more costly to implement (Seymour et al. 2020).

A-WEAI and pro-WEAI include a question that was not included in the original WEAI, which asks respondents whether in the last 24 hours they worked (either at home or outside the home) more than usual, about the same as usual, or less than usual. This question is optional and can be used to check how much of the data reflects atypical work days. Note, however, that this question is not used in the calculation of the *work balance* indicator.

Adaptations:

Additional activities may be included in the questionnaire for this indicator to better suit a project's context. In addition, existing activities may be disaggregated and asked about separately. For example, instead of having one activity code for shopping or getting services such as health services, separate activity codes may be created for shopping and getting services. However, no activity may be omitted, and we do not recommend further aggregation of activities.

The 15-minute intervals used to record activities maybe shortened (e.g., to 10 or 5 minutes) but may not be lengthened (e.g., to 20 or 30 minutes). Due to the way the module is asked, lengthening the time of these intervals makes it more difficult for enumerators to capture start and end times of activities accurately and introduces measurement error.

Visiting important locations

This indicator is new and was not included in the WEAI or A-WEAI. The discussions of mobility during the qualitative data collection on pro-WEAI showed the extent of restrictions on women's ability to leave the homestead owing to gender norms and lack of time, as well as the importance of free movement to enable women to attend group meetings and earn income (Meinzen-Dick et al. 2019).

To measure this indicator, individuals are asked how often they visit a range of places including: an urban center, the market, family or relatives, any health service, public village gatherings / community meetings / training. Individuals chose from one of six responses: everyday, every week at least once, every 2 weeks at least once, every month at least once, less than once a month, or never.

In order to be considered adequate respondents must meet at least one of two conditions: 1) They visit at least two of three locations: urban center, market, family/relative, at least once per week, or 2) they visit at least one of the two locations: health facility or public meeting, at least once per month. Different thresholds are used to account for differences in the types of location visited. For example, we would not expect respondents to visit a health facility once per week.

Adaptations:

Additional locations may be included in the questionnaire for this indicator to better suit a project's context. However, no location may be omitted, and we do not recommend further aggregation of locations. The response options may be changed to exclude the options "everyday", "every 2 weeks at least once" and "never" but the options for "every week at least once", "every month at least once" and "less than once a month" must be preserved. In such cases, "never" should be coded as "less than once a month"; "every 2 weeks at least once" should be coded as "every month at least once"; and "everyday" should be coded as "every week at least once." Given the complexity introduced by these changes, we advise caution when deciding to make these adjustments, as they may make it more difficult for enumerators to capture the information given to them by respondents.

Domain 3: Collective Agency

This domain aims to capture the individual's participation and influence in his or her community. One indicator is used as a proxy for that: active membership in community groups. The original WEAI included an indicator on speaking in public, which proved to be a highly sensitive topic in many settings, and is no longer included in the A-WEAI and pro-WEAI.

Group membership

The *group membership* indicator shows whether the person is an active member of at least one group: agriculture producers' or marketing groups, water users' groups, forest users' groups, credit or microfinance groups; mutual help or insurance groups (including burial societies), trade and business associations, civic or charitable groups, religious groups, and other women's, men's or mixed-sex groups. While the threshold for "active" membership is subjective and should be defined by the respondent, if the respondent asks for clarification, they should be informed that it could involve attending meetings, paying a user fee, holding a leadership position within the group, etc. Group membership is deliberately not restricted to formal agriculture-related groups because other types of civic or social groups provide important sources of networks and social capital that are empowering in themselves and may also be an important source of agricultural information or inputs (Meinzen-Dick et al., 2012). An individual is considered adequate if they are an active member of at least one group. If there are no groups in the community, he/she is inadequate in this indicator.

The discussions of group membership in the qualitative work on pro-WEAI gave clear examples of how participation in groups could be empowering through new access to information, resources, a chance for women to connect with others, and a space where women can have opportunities to lead others (Meinzen-Dick et al. 2019). Thus, *group membership* is a suitable indicator of collective agency, although it may not go far enough to capture local definitions of empowerment as the ability to help others.

Adaptations:

Additional groups may be included in the questionnaire for this indicator to better suit a project's context. In addition, existing groups may be disaggregated and asked about separately. For example, instead of collectively asking about agricultural / livestock / fisheries producers' groups, you may ask about agricultural,

livestock and fisheries producer's groups separately. However, no groups may be omitted, and we do not recommend further aggregation of groups.

A2.Differences between pro-WEAI, A-WEAI and WEAI

Details of the differences in each indicator between the pro-WEAI, A-WEAI and WEAI are covered above. The pro-WEAI includes 3 indicators not previously included in the WEAI or A-WEAI. Six of the pro-WEAI indicators are based on indicators included in the WEAI but have been adapted to better suit the use of the WEAI for projects. One indicator, *group membership*, is unchanged between the WEAI, A-WEAI and pro-WEAI. Table 3 summarizes these differences.

Table 3. Pro-WEAI indicators, definitions of adequacy, and comparison to the WEAI and A-WEAI

Indicator	Definition of adequacy	Difference compared to WEAI and A-WEAI
<i>Intrinsic Agency</i>		
Autonomy in income	More motivated by own values than by coercion or fear of others' disapproval: <i>Relative Autonomy Index</i> ^A score ≥ 1 RAI score is calculated by summing responses to the three vignettes (yes=1; no=0), using the following weighting scheme: -2 for vignette 2 (external motivation), -1 for vignette 3 (introjected motivation), and +3 for vignette 4 (autonomous motivation)	Based on <i>autonomy in production</i> indicator in the WEAI but now focuses exclusively on the use of income generated from agricultural and non-agricultural activities and uses a new vignette-based survey instrument. Not included in the A-WEAI.
Self-efficacy	"Agree" or greater on average with self-efficacy questions: <i>New General Self-Efficacy Scale</i> ^B score ≥ 16	Not included in WEAI or A-WEAI
Attitudes about intimate partner violence against women	Believes husband is NOT justified in hitting or beating his wife in all 5 scenarios: ^C 1) She goes out without telling him 2) She neglects the children 3) She argues with him 4) She refuses to have sex with him 5) She burns the food	Not included in WEAI or A-WEAI
<i>Instrumental Agency</i>		
Input in livelihood decisions	Meets <u>at least ONE of the following conditions</u> for <u>ALL of the agricultural activities</u> they participate in 1) Makes related decision solely, 2) Makes the decision jointly and has at least some input into the decisions 3) Feels could make decision if wanted to (to at least a MEDIUM extent)	Included in WEAI and A-WEAI, but uses a stricter adequacy cut-off
Ownership of land and other assets	Owns, either solely or jointly, <u>at least ONE of the following</u> : 1) At least THREE small assets (poultry, non mechanized equipment, or small consumer durables) 2) At least TWO large assets 3) Land	Included in WEAI and A-WEAI, but uses a stricter adequacy cut-off
Access to and decisions on financial services	Meets <u>at least ONE of the following conditions</u> : 1) Belongs to a household that used a source of credit in the past year AND participated in at least ONE sole or joint decision about it 2) Belongs to a household that did not use credit in the past year but could have if wanted to from at least ONE source 3) Has access, solely or jointly, to a financial account	Based on <i>access to and decisions on credit</i> indicator in WEAI and A-WEAI, but adds to the adequacy definition access to financial accounts and, for households that did not use credit in the past year, whether they could have obtained credit if desired.
Control over use of income	Has input in decisions related to how to use BOTH income and output from ALL of the <u>agricultural activities</u> they participate in AND has input in decisions related to income from ALL non-agricultural activities they participate in, unless no decision was made	Included in WEAI and A-WEAI, but uses a stricter adequacy cut-off

Work balance	Works less than 10.5 hours per day: Workload = time spent in primary activity + (1/2) time spent in childcare as a secondary activity	Similar to 'Workload' indicator in WEAI and A-WEAI but restricts the measurement of secondary activities (not collected in A-WEAI) to only childcare).
Visiting important locations	Meets <u>at least ONE</u> of the following conditions: 1) Visits at least TWO locations at least ONCE PER WEEK of [urban area, market, family/relative], or 2) Visits least ONE location at least ONCE PER MONTH of [health facility, public meeting]	Not included in WEAI or A-WEAI

Collective Agency

Group membership	Active member of at least ONE group	Same as in WEAI and A-WEAI
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Notes: ^A The Relative Autonomy Index (RAI), based on self-determination theory, is a measure of internal and external motivations that determine person's decisions (Ryan and Deci 2000).

^B The New General Self-Efficacy Scale (NGSE) is a validated scale to measure self-efficacy, or a person's capabilities and ability to reach their goals (Chen et al. 2001).

^C These scenarios are based on previously validated items from the Demographic and Health Surveys (Yount et al. 2014).

A3. Survey questions

Details of how survey questions are used in the calculation of each indicator are covered above. Table 4 summarizes this information, outlining the survey questions and question numbers in the pro-WEAI questionnaire.

Table 4. Survey questions used to construct pro-WEAI indicators

Indicator	Survey Questions	Question Number
<i>Intrinsic Agency</i>		
Autonomy in income	Are you like this person? "[PERSON'S NAME] uses her (his) income how another person tells her (him) she (he) must use." No one tells [PERSON'S NAME] how to use her (his) income. But, she (he) uses her (his) income in the way that her (his) family or community expects." "[PERSON'S NAME] chooses to use her (his) income how she (he) personally wants and thinks is best."	G8.01
Self-efficacy	Think about how each statement relates to your life, and then tell me how much you agree or disagree with the statement: 2) When facing difficult tasks, I am certain that I will accomplish them. 3) In general, I think that I can obtain outcomes that are important to me. 6) I am confident that I can perform effectively on many different tasks. 8) Even when things are tough, I can perform quite well.	
Attitudes about intimate partner violence against women	In your opinion, is a husband justified in hitting or beating his wife in the following situations? 1) If she goes out without telling him? 2) If she neglects the children? 3) If she argues with him? 4) If she refuses to have sex with him? 5) If she burns the food?	G9.01
<i>Instrumental Agency</i>		
Input in livelihood decisions	How much input did you have in making decisions about: staple grain farming, horticultural or high value crop farming, large livestock raising and processing, small livestock raising and processing, poultry raising and processing, fishing or fishpond culture, non-farm economic activities, and wage and salary employment. ? [To what extent do you feel you can participate in decisions regarding these aspects of household life if you want(ed) to?	G2.01-04

Ownership of land and other assets	Does anyone in your household currently have any [ITEM]? Do you own any of the [ITEM]? Agricultural land, Large livestock, Small livestock, Poultry, Fish pond/equip; Farm equip (non-mech); Farm equip (mechanized) Nonfarm business equipment; House or building; Large durables; Small durables; Cell phone; Non-ag land (any); Means of transportation	G3.01,05-07
Access to and decisions on financial services	Would you or anyone in your household be able to take a loan or borrow cash/in-kind from [SOURCE] if you wanted to? Has anyone in your household taken any loans or borrowed any cash/in-kind from [SOURCE] in the past 12 months? Who made the decision to borrow/what to do with money/item borrowed from [SOURCE]? Non-governmental organization (NGO); Informal lender; Formal lender (bank); Friends or relatives; ROSCA (savings/credit group). Do you, either by yourself or together with someone else, currently have an account at a bank or other formal institution?	G3.08-11
Control over use of income	How much input did you have in decisions on the use of income generated from: staple grain farming, horticultural or high value crop farming, large livestock raising and processing, small livestock raising and processing, poultry raising and processing, fishing or fishpond culture, non-farm economic activities, and wage and salary employment.? How much input did you have in decisions on the use of outputs to keep for consumption at home rather than selling from: : food crop farming, cash crop farming, livestock raising, fish culture, non-farm economic activities, wages?	G2.06-07
Work balance	Worked more than 10.5 hours in previous 24 hours.	G4.01-02
Visiting important locations	How often do you visit: urban center, market, family/relatives, health service, public village gathering / community meeting / training?	G6.01-03,05-06
<i>Collective Agency</i>		
Group membership	Are you a member of any: Agricultural / livestock/ fisheries producers' group (including marketing groups); Water; Forest users'; Credit or microfinance group; Mutual help or insurance group (including burial societies); Trade and business association; Civic/charitable group; Religious group; Other group	G5.03

A4. 3DE, GPI and pro-WEAI

In this section we discuss the different ways in which the pro-WEAI indicators are aggregated. For more technical definitions of these measures see the [pro-WEAI glossary](#) and [Malapit et al. \(2019\)](#)⁸.

Empowerment Score

Using individual responses to the survey questions outlined above, each of the ten indicators are assigned a value of 1 if the individual's achievement is adequate, i.e., it exceeds the defined adequacy threshold for the specific indicator, and a value of 0 otherwise. An individual's empowerment score is the weighted average of these ten indicators using equal weights. In other words, the empowerment score reflects the percentage of indicators in which a person has achieved adequacy.

Disempowerment Score

An individual's disempowerment score is their empowerment score subtracted from one. In other words, the disempowerment score reflects the percentage of indicators in which a person has not achieved adequacy.

⁸ Note that this paper describes the draft version of pro-WEAI which collected 12 indicators. Two of the indicators, *respect among household members* and *membership in influential groups* have since been dropped from pro-WEAI.

Empowerment

An individual is considered empowered if he/she is adequate in 80% (or 8 out of 10) of the indicators, i.e. has an empowerment score of 0.8 or higher. Individuals below the cutoff are considered disempowered. We use adequacy to express how an individual fares with respect to each indicator and empowerment to express how someone fares across all 10 indicators. For example, an individual who is *adequate* in only 5 indicators is considered *disempowered*.

Intrahousehold Inequality Score

The intrahousehold inequality score is the difference between the empowerment scores of a woman and her husband/partner, ranging from -1 to +1. A positive score indicates that a husband is more empowered than his wife, a score of 0 indicates that there is no difference in their empowerment scores and a negative score indicates that a wife is more empowered than her husband. Higher intrahousehold inequality scores indicate a larger gap between the empowerment of husband and wife.

Gender Parity

A household achieves gender parity if:

- (1) the woman is empowered (adequate in at least 80% of the indicators, i.e. has an empowerment score of .08 or higher)) or
- (2) her empowerment score is at least equal to the score of her spouse/partner.

This means that all empowered women have achieved gender parity. Gender parity is measured at the household level.

Number of Observations (n)

This indicates the number of women and men who have complete information for all pro-WEAI indicators and whose data, thus, contributes to the 3DE score.

Percent Achieving Empowerment

Also referred to as the adequacy headcount ratio, the percent achieving empowerment refers to the proportion of respondents in the sample who are empowered; meaning that they demonstrate adequacy in at least 80% of the indicators.

Percent Not Achieving Empowerment

Also referred to as the inadequacy headcount ratio, the percent not achieving empowerment refers to the proportion of respondents in the sample who are disempowered; meaning that they fail to demonstrate adequacy in at least 80% of the indicators.

Mean Disempowerment Score Among Disempowered (A_p)

The mean disempowerment score among disempowered is the mean total of indicators in which disempowered women and men are inadequate. As such, it reflects the intensity or breadth of disempowerment among women. Mathematically, it can be expressed:

$$A_p = \frac{\sum_{i=1}^n c_i(k)}{q}$$

Here, q is the number of disempowered women, and $c'_i(k)$ is the disempowerment score.

Mean Empowerment Score Among Disempowered (A_e)

The mean empowerment score among disempowered is the mean total of indicators in which disempowered women and men are adequate. It is equal to $(1 - A_p)$.

Three Domains of Empowerment (3DE) Score

The 3DE is based on the Alkire Foster methodology and reflects:

- (1) Incidence of empowerment: The percentage of women who are empowered
- (2) Adequacy among the disempowered: The mean empowerment score of the disempowered weighted by the percentage of women who are disempowered

These two elements capture how widespread empowerment is, and how close disempowered individuals are to becoming empowered. The 3DE, therefore, reflects the extent (prevalence) and intensity (depth) of empowerment in the sample. Considering both of these elements is important for understanding disempowerment within a sample population. This reflects the extent of individual empowerment in the sample without taking gender parity into consideration. Note that 3DE is calculated using information from all women in the sample, regardless of whether she belongs to a dual-adult household, where both male and female decision makers are present, or a female-only household, where there is no male decision maker present.

The 3DE can be expressed:

$$3DE = H_e + (H_p \times A_e)$$

H_e is the proportion of women in the sample who are empowered, H_p is the proportion of women in the sample who are disempowered, and A_e is the mean empowerment score of disempowered women.

Disempowerment Index (1 – 3DE or M_0)

The disempowerment index is equal to the *complement* of the 3DE score ($1 - 3DE$), and reflects the overall level of disempowerment among women in the sample population, without taking gender parity into consideration. It can also be calculated as the product of the disempowerment headcount ratio and the intensity of disempowerment, as shown below:

$$M_0 = H_p \times A_p$$

H_p is the proportion of women in the sample who are disempowered, and A_p is the mean disempowerment score among disempowered women.

Number of Dual Adult Households (m)

Dual adult households refer to households with both female and male adult residents and who have complete information for all pro-WEAI indicators. The number of these households in the sample is relevant because it constitutes the sample size for the gender parity index (GPI), as well as other statistics involving gender parity, such as the mean intra-household inequality score and the mean empowerment gap. Gender parity cannot be calculated in a female-only household, because there is no man against which to directly compare the disempowerment of a woman.

Percent Not Achieving Gender Parity (H_{GPI})

The percent not achieving gender parity refers to the proportion of dual adult households in the sample that do not achieve gender parity, or in which the disempowerment score of the woman is greater than that of the man, and the woman is not empowered. Mathematically, it can be expressed:

$$H_{GPI} = \frac{r}{m}$$

Here, r is the number of households that do not achieve gender parity, and m is the number of dual adult households in the sample.

Percent Achieving Gender Parity ($1 - H_{GPI}$)

The percent achieving gender parity refers to the proportion of dual adult households in the sample that achieve gender parity, or in which the empowerment score of the woman is greater than or equal to that of the man. Note that if a woman is empowered, her household is considered to have achieved gender parity, regardless of the empowerment gap between the man and the woman in the household. As shown in the heading, it can be expressed as the percent not achieving gender parity, subtracted from 1.

Mean Empowerment Gap (I_{GPI})

The mean or average empowerment gap is the average percentage shortfall that a woman without parity experiences relative to her partner. The mean empowerment gap reflects the average difference between the empowerment scores of the man and woman in the household, and is only calculated for those households that do not achieve gender parity. In other words, the mean empowerment gap is the mean intra-household inequality score for households that do not achieve gender parity. This gives us an idea of the performance of households that do not meet gender parity.

The mean empowerment gap (I_{GPI}) can be expressed:

$$I_{GPI} = \frac{1}{h} \sum_{i=1}^h \frac{c'_i(k)^M - c'_i(k)^W}{1 - c'_i(k)^M}$$

In the above, $c'_i(k)^W$ and $c'_i(k)^M$ are the censored disempowerment scores of the woman and man, respectively, living in household i , and h is the number of dual-adult households that lack gender parity.

Gender Parity Index (GPI)

The gender parity index follows a similar logic to the 3DE and combines two concepts:

- (1) The percentage of households in which gender parity is achieved
- (2) The mean empowerment gap

The GPI reflects the extent (prevalence) and intensity (depth) of gender parity in the sample. The GPI adapts the Foster-Greer-Thorbecke Poverty Gap measure to reflect gender parity.

The GPI can be expressed:

$$GPI = 1 - (H_{GPI} \times I_{GPI})$$

H_{GPI} is the proportion of households in the sample that achieve gender parity, and I_{GPI} is the mean empowerment gap, detailed above.

Pro-WEAI

Pro-WEAI is the weighted sum of two sub-indices. The first is the 3DE. The second is the GPI. The two sub-indices are added together to calculate pro-WEAI, with the 3DE receiving a weight of 90% and the gender parity index receiving a weight of 10%. The weighting scheme reflects the greater overall importance of individual empowerment. The smaller weight assigned to GPI acknowledges the importance of empowerment dynamics within the household, but also recognizes that the GPI can only be calculated in households where both men and women respondents are present.

The pro-WEAI score therefore encompasses the two elements of the 3DE, the % achieving empowerment and the empowerment score among the disempowered weighted by the % disempowered, and the two elements of the GPI,

the % of households achieving gender parity as well as the mean empowerment gap weighted by the % of households without parity. As the 3DE reflects the extent (prevalence) and intensity (depth) of individual empowerment in the sample and the GPI reflects the extent (prevalence) and intensity (depth) of gender parity in the sample, the pro-WEAI reflects both the extent and intensity of empowerment taking gender parity into consideration. The final pro-WEAI score ranges from 0 to 1, with higher values indicating greater empowerment.

Pro-WEAI can be expressed:

$$pro-WEAI = \frac{9}{10} 3DE + \frac{1}{10} GPI$$

Uncensored Inadequacy Headcount Ratio (h_j)

The uncensored inadequacy headcount ratio is the proportion of women or men who are inadequate in an indicator j , regardless of whether they are empowered or disempowered. It can be expressed:

$$h_j = \frac{1}{n} \sum_{i=1}^n g_{ij}$$

Here, n refers to the number of women and men in the sample, and g_{ij} is their inadequacy status (i.e., if person i is inadequate in indicator j , then $g_{ij} = 1$).

Censored Inadequacy Headcount Ratio ($h'_j(k)$)

The censored inadequacy headcount ratio is the proportion of men and women in the sample who are disempowered and simultaneously inadequate in indicator j . It can be expressed:

$$h'_j(k) = \frac{1}{n} \sum_{i=1}^n g'_{ij}(k)$$

Here, $g'_{ij}(k)$ is equal to g_{ij} , the inadequacy status of person i in indicator j , if $c_i > k$ (i.e., if the inadequacy score of person i is greater than the disempowerment cutoff k , meaning person i is disempowered). Otherwise (i.e., if person i is empowered), $g'_{ij}(k) = 0$. n is the number of men and women in the sample.

Absolute Contributions to Disempowerment

The disempowerment index, M_0 can be decomposed to show the contribution of each indicator to the disempowerment index. The sum of the absolute contributions of each indicator to disempowerment is equal to the disempowerment index. The absolute contribution of indicator j to disempowerment can be expressed:

$$w_j \times h'_j(k)$$

Here, w_j refers to the weight of indicator j , and $h'_j(k)$ refers to the censored inadequacy headcount ratio.

Relative Contributions to Disempowerment

The relative contribution to disempowerment is similar to the absolute contribution, but it is divided by the disempowerment index. As such, the sum of the relative contributions of each indicator to disempowerment is equal to 1 (or 100, if expressed as a percentage). If the relative contribution to disempowerment of an indicator greatly exceeds its weight (always equal to 1/10 in pro-WEAI), this suggests that the disempowered are disproportionately more inadequate in this indicator compared to other indicators. The relative contribution of indicator j to disempowerment can be expressed:

$$\frac{w_j \times h'_j(k)}{M_0}$$

Here, w_j refers to the weight of indicator j , $h'_j(k)$ refers to the censored inadequacy headcount ratio, and M_0 refers to the disempowerment index.

A5. Adaptations to pro-WEAI:

The full pro-WEAI includes 10 indicators (see Table 2). In cases where indicators are omitted the pro-WEAI may be calculated with a minimum of 8 indicators. Any pro-WEAI calculated with less than 10 indicators must be reported as a modified pro-WEAI and the reasons for the omission of indicators made explicit. Additionally, it is not permissible to omit more than one indicator from either the intrinsic or instrumental domains. Group membership, being the only indicator in the collective domain, may not be omitted. Note that there are no limitations around which indicators within the instrumental and intrinsic agency domains can be dropped, as long as no more than 2 indicators in total are dropped.

For modified pro-WEAIs calculated with 9 indicators an empowerment cut-off of 7 adequate indicators or an empowerment score of 77.8% must be used. For modified pro-WEAIs calculated with 8 indicators an empowerment cut-off of 6 adequate indicators or an empowerment score of 75% must be used.

While entire modules of the pro-WEAI survey can be rearranged within a larger survey, the questions within a pro-WEAI module should not be reordered. For example, module G5 can precede module G2(A) without any problems. But if you reorder within a module, the skip patterns might cause you to lose data. Modules covering sensitive topics, such as module G9 on attitudes about domestic violence, are prone to response bias, and are generally administered towards the end of the survey. However, we caution that adding all the pro-WEAI survey modules at the end of a larger survey may affect the quality of data because of respondent fatigue.

Part B: Survey Design and Data Collection

B1. Ethics review and informed consent

The data collection firm must obtain the required ethics approvals from the appropriate institutions and agencies in the country where the pro-WEAI will be implemented. Research plans and instruments, as well as guidelines around informed consent of interview subjects must be submitted for ethics review.

Good Practice Tips for Maintaining Ethical Standards

- Translate informed consent pages into local languages (multiple if applicable).
- Leave one copy of the informed consent page with respondents so that they have the contact information for the study on hand.
- Keep data with identifying information such as names, addresses, telephone numbers or GPS coordinates on secure, encrypted servers or computers.
- Refer to informed consent examples in the pro-WEAI enumerator manual.⁹

B2. Sampling

Sampling guidelines will depend on the overall objectives of the survey and the motivations for using pro-WEAI. Below we provide basic guidance on the use of pro-WEAI in impact evaluations and in descriptive (or diagnostic) studies. In either case, we strongly recommend consulting a statistician to determine the best sample size for your project.

To estimate the impact of an intervention, the sample size for your study will, in general, depend on your main outcomes of interest and the effect size you want to detect at a specified significance level. Detailed guidance on conducting power calculations using Stata (as well as other statistical packages) can be accessed widely online. For example, useful guides on power calculations are available from the Development Impact Evaluation (DIME) group at the World Bank ([here](#)) and J-PAL ([here](#)). For further discussion on power calculations (and impact evaluations in general) see Duflo et al. (2007).

Good Practice Tips

- Ensure that a household roster and key demographic information is collected in addition the pro-WEAI module. The household roster should typically be administered to the most knowledgeable household member regarding age, completed education, and other characteristics of household members. This will enable the analysis of correlates and conditioning factors that affect individual empowerment.

⁹ The pro-WEAI enumerator manual can be found [here](#).

- Ensure that the pro-WEAI is collected in the same households from which other key outcomes of interest (e.g., poverty, nutrition, etc.) are being collected. Otherwise, you will not be able to analyze the linkages between the pro-WEAI and those other indicators.
- If all households within a larger survey sample cannot be surveyed due to time or budget constraints, we recommend random exclusion (inclusion) of households for pro-WEAI.

B3. Household roster and respondent selection

A household roster is needed prior to administering the pro-WEAI because questions about decision-making require selecting respondent IDs from the household roster. A clear and standardized definition of the household is important, as research from IFPRI and others have found that different household definitions result in different household compositions, and can have significant impacts on variation of outcome indicators particularly surrounding labor and consumption (Beaman and Dillon 2012).

We recommend defining a *household* as a group of people who live together and take food from the “same pot” (Ayad et. al., 1994; Glewwe, 2000). A key part of this definition is that the group of individuals shares at least some common resources and makes some common budget and expenditure decisions. Importantly, a household does not necessarily need to have a single common decision-maker. A household member is someone who has lived in the household at least 3 months out of the last 6 months, and at least three days in each week in those months. Even those persons who are not blood relations (such as domestic workers, lodgers, or agricultural laborers) are members of the household if they meet these qualifications, and alternatively, individuals who sleep in the household, but do not bear any costs for food or do not take food from the same pot, are not considered household members. This definition, including more specific examples and guidelines, is found in the pro-WEAI Enumeration Manual ([here](#)).

A very important issue in measurement and monitoring of pro-WEAI is *who* is being measured or tracked. Users of pro-WEAI must carefully consider whose empowerment it makes sense to track in the context of their project or intervention’s theory of change.

The pro-WEAI questionnaire should typically be administered to a woman and man from each household. The *primary respondent* is the man or woman in the household who is targeted by the program. Note that the selection of primary respondent in control households will depend on the project context and evaluation design; however, in most cases, it will be the primary female adult decisionmaker who is engaged in rural and agricultural livelihoods. The *secondary respondent* is typically the spouse/partner of the project participant. If the project participant does not have a spouse/partner residing in the household, the primary adult decisionmaker of the opposite sex who is engaged in rural and agricultural livelihoods may be selected if this makes sense given project objectives. In this case, we would recommend that different relationships (i.e., spouses, in-laws, etc.) be analyzed separately if there are sufficient observations for each type of relationship.

In rare cases in which multiple participants of the same sex reside within the same household, pro-WEAI may be administered separately to each of them and to their respective spouse/partner. If one or both of the participants do not have a spouse/partner residing in the household, the primary adult decisionmaker of the opposite sex who is engaged in rural and agricultural livelihoods may be selected if this makes sense given project objectives.

Pro-WEAI calculation requires data from at least one woman in the household. Thus, households with only male adult or no adult residents are excluded from pro-WEAI calculation. However, the survey may be administered to these households and empowerment scores calculated for respondents in these households if you have a specific research interest in these types of households.

Good Practice Tips

- It is crucial that all enumerators have the same understanding of the definition of a household prior to data collection.
- For projects that plan to conduct panel surveys, pre-fill member IDs and relevant information (such as name, age, and sex) for the same members (*primary* and *secondary respondents*) for follow-up pro-WEAI surveys. This will enable you to track empowerment of the same individuals over time.
- Discuss with your research team and decide on clear inclusion and exclusion criteria for households with no adult females prior to data collection for your project.
- In settings where polygamous households are common, the choice of female decisionmaker should be guided by the project's approach to selecting a target participant. Otherwise, users may select the most senior wife or randomly select one of the wives to be interviewed.

B4. Logistics

We strongly recommend that enumerators travel in male and female pairs and carry a back-up paper copy of the pro-WEAI module if implementing CAPI, or duplicate copies if implementing PAPI. This facilitates interviewing the primary male and female decision-maker separately and in private.

Good Practice Tips

- Have enumerators travel in teams of two, ideally, male and female pairs. Having more than one male and female pair in a locality also improves security for the females in the survey team (who can then stay together locally).
- Carry duplicate copies of the pro-WEAI module. If data collection is done through tablets, each enumerator should have her or his own tablet to use.

Be sure that the survey is introduced to community leaders before it begins, and phrased in a way such that you build community support for interviewing men and women separately. In very conservative areas, you might want to say that you want to enable women to better fulfill their roles as mothers and guardians of their families' food security.

In selecting enumerators, it is important to consult with local partners about local languages and dialects spoken in the areas where the survey is conducted, as well as cultural norms that may require matching interviewers to respondents by gender, race, religion, or other characteristics (Alcser and Clemens, 2011). Because the subject of the survey is highly sensitive, it is important to choose enumerators that respondents would feel comfortable speaking with privately. Unless cultural norms suggest otherwise, we recommend that male enumerators interview the male respondents, and

female enumerators interview the female respondents, as was done in the pilot surveys. In most cases, matching enumerators and respondents based on sex and language/dialect will be sufficient.

B5. Adapting the pro-WEAI module to the local context

Translation

Ensuring the pro-WEAI module is accurately translated to the appropriate local languages and dialects is especially important for making meaningful cross-country comparisons of the pro-WEAI (Üstun et al, 2005). The most important thing is to ensure that the translation conveys the original intent and meaning of the questions, so that the same concepts are measured within and across countries. This should be addressed through a process of “team translation,” in which a team with a diverse set of skills works together through a series of stages in order to produce a sufficient translation. Where the organization implementing the survey does not have extensive experience and understanding of gender gaps in that country, it is recommended to involve someone who does have this expertise to adapt and pretest the questionnaire.

Good Practice Tips

- Use cognitive interviewing to check whether respondents understand the intended meaning of questions. This can reveal not only translation issues, but other sources of response error. The pro-WEAI Qualitative Protocol discusses cognitive interviewing in more detail. See Johnson & Diego-Rosell (2015) for more guidance on conducting cognitive interviews
- If resources preclude cognitive interviewing, then focus groups can be used to talk through translations and verify that they convey the original intent and meaning of the questions.

Modifying survey module

The pro-WEAI module should be carefully reviewed and modified, as appropriate, to reflect local conditions, ideally in consultation with local partners and using previously implemented household surveys in the country and regions if possible. The allowable adaptations to each indicator and respective survey questions are described above in Section A1. For example, additional activities may be included in module G2 (used to calculate *input in livelihood decisions* and *control over use of income*) to better suit a project’s context. In addition, existing activities may be disaggregated and asked about separately. For example, instead of asking about small livestock raising, which includes sheep, goats, and pigs, you may ask about sheep, goats, and pigs separately. In the case of fishpond culture, if there is strong reason to suspect that very few respondents engage in fishpond culture, then it is permissible to omit this activity. However, other than fishpond culture, no activity may be omitted, and activities should not be aggregated. Note that modifications to the pro-WEAI module may require changes to the standard Stata dataprep do file.

Good Practice Tips

- Consult with local partners on which local adaptations are appropriate.
- Whenever possible, refer to previously implemented household surveys in the country and/or region.

- Before finalizing modifications on lists and response categories, review the potential impact on the calculation of the Index based on the inadequacy cut-offs and aggregation method.
- If certain questions are more sensitive in a given culture, it is possible to re-order the sub-modules of the questionnaire so that the sensitive sections are asked towards the end of the interview. As long as all the questions are collected (other than those pertaining to indicators which you have omitted), you will still be able to calculate the pro-WEAI. Note, however, that you will need to check that the correct question numbers are used in the Stata dataprep do file.

B6. Training

The pro-WEAI module focuses on concepts that are not traditionally collected in standard household surveys. Therefore, extensive training is necessary to ensure the quality of the data collected. Beyond basic interviewer training, field staff must also undergo specific training on the distinctive features of the pro-WEAI. Some issues that may require additional attention include:

- Selecting primary male and primary female respondents
- Interviewing men and women separately, and tips on how to interview respondents alone
- How to interpret questions in the local language to convey complex concepts, such as empowerment, across different dialects
- How to solicit responses, classify activities, and use the storytelling approach in collecting Time Allocation [pro-WEAI Module G4]

In the pilot surveys, it was especially useful for trainers to go over different cases and examples, especially on how to collect time allocation. We also recommend providing sufficient time for hands-on training, such as role playing and mock interviews. Pretesting is also important to make sure that enumerators are implementing the questionnaire and entering responses correctly.

Based on experience from other projects, we recommend spending a minimum of three days exclusively training the pro-WEAI modules. We also recommend scheduling sufficient time for enumerators to pretest the pro-WEAI questionnaire with respondents. While pretest communities should be as similar as possible to the communities within the actual study area, they are often selected based on convenience to minimize field costs. Practice during role-playing and pretesting is even more important for the more difficult pro-WEAI modules, such as those used to construct *work balance* and *autonomy in income*. During pre-testing, ask enumerators to keep track of errors, problems, or translation issues in the questionnaire for discussion and correction in the post-pilot debrief.

Good Practice Tips

- Plan for at least three days for training on the pro-WEAI modules
- Make use of the pro-WEAI enumerator manual. This manual explains the purpose of survey, how to do basic tasks, how to deal with unusual cases, and general guidelines or procedures for dealing with unforeseen problems. You can find the manual [here](#).

- Prepare manuals before training begins and update them with additional information as needed.
- Ensure that training procedures and manuals are culturally sensitive.
- Allocate sufficient time for hands-on training, such as role playing and mock interviews.
- Pretest questionnaires (in multiple languages if applicable), fieldwork, data entry plans and all other aspects of the survey.
- We recommend reviewing and practicing with the paper-based questionnaire as a group prior to practicing with tablets. Instead of focusing on the tablets, this step ensures that all enumerators understand:
 - each question
 - the intention behind each question
 - how the questions fit into the whole survey
 - Any issues with translation can also be addressed during this time
- During pretesting, keep track of questions or modules that were difficult to implement and discuss these difficulties during post-pilot debrief and provide enumerators with additional practice time as needed
- Schedule daily/biweekly debriefing sessions with enumerators to address any problems/issues that arise and make adjustments on the questionnaires, work and data entry plans, and manuals. This process should include monitoring all or a selection of the survey questions to check that skip patterns are working properly and there are no errant response codes, and feeding this information back to supervisors.
- Ask your enumerators to take the [pro-WEAI Distance Learning Foundations Course](#).

B7. Administering pro-WEAI survey modules

In the questionnaire, you will notice that there are different colors of font. Questions in black are required for constructing the pro-WEAI indicators and must not be altered, excluding the allowable adaptations noted in Section A1. Questions in purple are optional and can be excluded from your survey. While it is okay to reorder entire survey modules, questions within a module should not be rearranged. For example, it is okay for Module G5 on *group membership* to precede Module G2 on the role in household decision-making around production and income, but not to reorder the activities asked about in Module G2.

As you go through each module, keep track of skip patterns to ensure that they are correctly coded in Computer-Assisted Personal Interviews (CAPI). Inconsistencies in skip patterns can cause you to lose valuable data that is required to calculate the pro-WEAI indicators.

A household roster is needed prior to administering the pro-WEAI because questions about decision-making require selecting answers from the household roster. Having pre-loaded household roster information in CAPI can prevent

errors. This household information is collected in the household interview. Assuming a wireless internet connection is available, this data can then be synced to the cloud and pre-loaded prior to the individual interviews. However, if a wireless internet connection is not available, the individual interviews must take place sequentially, rather than simultaneously. Data can also be uploaded using an SD card or USB drive, but this can introduce errors and therefore is not recommended. If paper-based surveys are used, the household roster should be available for reference while administering the pro-WEAI modules.

Each of the decision-making questions allows space to enter up to 3-member IDs or names. If there are more than 3 decision-makers, ask the respondent to mention the 3 most important decision-makers. Do not attempt to ensure that the responses are the same between the male and female respondents; it is okay for them to be different.

We often receive questions on how long it takes to administer the pro-WEAI. Depending on enumerator experience, the pro-WEAI questionnaire takes approximately 45 minutes per respondent to complete. Keep in mind that these estimates are only for the pro-WEAI modules and that your full household survey will likely be much longer.

For more detailed guidance on administering pro-WEAI modules refer to our enumerator manual or our [pro-WEAI Distance Learning Course](#).

Good Practice Tips

- Have household roster pre-loaded to make selecting decision-makers more easily
- Decision-making questions allow for up to 3 Member IDs/Names
- If there are more than 3 decisionmakers, ask the respondent to mention the 3 most important decisionmakers
- Do not attempt to ensure that responses are the same between the male and female respondent. It is okay for them to be different.
- The pro-WEAI takes approximately 45 minutes per respondent.

B8. Sequencing quantitative and qualitative data collection

We encourage the use of mixed methods when feasible. However, different sequencing between qualitative and quantitative data collection answers different questions, so the sequencing approach depends on your specific project needs. As such, we advise determining what questions you want to answer early in the planning process. Sequencing of qualitative and quantitative shapes the data collection and analysis timelines, informs your budget, and how you and your collaborators will want to divide the work according to each partners' skill set.

Generally, you can do qualitative work before and/or after quantitative data collection. Conducting qualitative data collection before quantitative work is best if you are doing exploratory work or cognitive interviewing. Doing qualitative work after a quantitative survey can help do a “deep dive” into your research question and population of interest. This deep dive can help you triangulate your findings to say where qualitative data confirm or contradict the quantitative

data. It can also help explain your quantitative results or program, such as to find out why you get certain results from the surveys.

In practice, mixed methods work best when used iteratively. More data of both kinds will enable you to examine the experiences of program participants, the study context, and your intervention in more detail – enriching your understanding of what does – and does not – work for women’s empowerment.

More information about how to sequence quantitative and qualitative methods for your project is covered in our [qualitative protocols](#) as well as in our [pro-WEAI distance learning course](#).

Part C: Pro-WEAI Calculation

C1. Data cleaning and consistency checking

Before calculating pro-WEAI, some standard data checks should be performed to ensure that the data is consistent and free from errors. Any data errors should be checked and resolved as much as possible to minimize any loss of observations for the index calculations. It may be necessary to consult the original questionnaires for possible data entry errors.

Standard checks include the following:

- Verify the structure of data and check for duplicate observations
- Check that reported values are within an acceptable range
- Check that response codes correspond with the survey
- Check that responses are consistent with skip patterns
- Check the distribution of missing responses

For pro-WEAI, the most common inconsistencies are in the time-use section. Standard checks include the following:

Total time spent in all primary activities must sum to **exactly** 1440 minutes (24 hours)

- If total time exceeds 1440 minutes, then there may be multiple primary activities recorded for the same time interval
- If total time is less than 1440 minutes, then there may be missing primary activities for some time intervals

Finally, ensure that universal codes are used correctly:

- Check that individuals that answer “Don’t know” to a question are given a value of 97 for that question.
- Check that individuals that answer “Not applicable (N/A) or No decision made” to a question are given a value of 98 for that question.
- Check that questions that are not answered (missing observations) are not given any value; that the cell is empty.

C2. Data preparation and the “weai” command

This section focuses on how to use the Stata *dataprep* do file and “weai” command to calculate pro-WEAI. The [dataprep do file](#) and [weai ado file](#) are available for download from the WEAI Resource Center.

The *dataprep* file is designed to be executed using cleaned and correctly formatted individual-level survey data. Specifically, your data must include:

- 1) Standard variable names
- 2) Consistent coding of the values of variables

Data requirements

There are three main variables that are essential for executing the *dataprep* do file: household ID, member ID, and sex.

Together, household ID and member ID should uniquely identify the observations. No two households should have the same HHID and no two household members should have the same member ID. The names for these variables in the *dataprep* do file are *hhid* for Household ID and *mid* for member ID. The dataset should contain 1 or 2 observations (respondents) per household. Your project may choose to administer the pro-WEAI to more individuals, but for the pro-WEAI calculations, you will need one female respondent in each household, and zero or one male respondents in each household.

To run the *dataprep* do file, you will need clean individual-level survey data for all respondents. Below are some tips to ensure you have the correct information:

- Data must have already been cleaned and checked for consistency (see section B1 for details)
- Must have all the required questions from the pro-WEAI module
- Must have identifiers and variables you need for merging and grouping (IDs, sex, region)
- The *dataprep* do file assumes that the time-use data has the following structure:
 - Wide format:
 - Primary activities: each individual has 24 variables, one for every activity category (activities A-X) that is the sum of the total number of minutes in each activity category spent as a primary activity (*minutes_A-minutes_X*)

- Secondary activities: One variable that is the sum of the total minutes spent caring for a child as a secondary activity throughout the day (timeslot_childcare)
- Note: If you do not have variables minutes_A-minutes_X and timeslot_childcare you can run the code currently enclosed in /* */ (lines 367-420) to calculate these variables. Alternatively, you can write your own code to create these variables.

How do the .do files and the “weai” command work?

1. The dataprep do file uses your cleaned survey data to calculate all 10 indicators and creates a dataset called “projectname_proweai_dataprep.dta” (where *projectname* is replaced according to the name inserted into the do file by the user).
2. The “weai” command uses the dataset created by the dataprep file (called “projectname_proweai_dataprep.dta”) to calculate pro-WEAI, generate tables and figures showing pro-WEAI results, and create variables for empowerment status, empowerment score, gender parity status, and the intrahousehold inequality score. These outputs, including additional results displayed in table format only (i.e., not saved as new variables), are described below.

Steps to calculating pro-WEAI

Step 1. Run the dataprep .do file. There are four easy steps to run this .do file:

1. Change the working directory to the file on your computer where your pro-WEAI data is stored
2. Change the project name to your project's name
3. Change the name of the data file to the name of your data file
4. Click Run!

The diagram illustrates the four steps to run the dataprep .do file, with arrows pointing from instructional boxes to specific lines of code in a Stata script:

- Step 1:** "1. Change the working directory to the file on your computer where your pro-WEAI data is stored" points to line 33: `cd "C:\IFPRI\ANH Academy learning labs\Stata Tutorial"`
- Step 2:** "2. Change the project name to your project's" points to line 36: `global projectname "anh2021"`
- Step 3:** "3. Change the name of the data file to the name of your data file" points to line 39: `use "anh2021_proweai_cleaned", clear`
- Step 4:** "4. Click Run!" is a general instruction for the entire script.

```

28 *****
29 *** SET DIRECTORY AND OPEN DATA ***
30 *****
31
32 ** Set working directory
33 cd "C:\IFPRI\ANH Academy learning labs\Stata Tutorial"
34
35 ** Store project name
36 global projectname "anh2021"
37
38 ** Open file with pro-WEAI indicators
39 use "anh2021_proweai_cleaned", clear
40

```

Step 2. Run the “weai” command.

1. If you have never used this command before you will need to install it on your computer. To do this, follow these steps:
 - a. Download the [weai ado zip file](#) from the WEAI Resource Center.
 - a. Extract the contents of the zip file to a temporary folder.
 - b. Type sysdir in Stata and note the location of your personal ado-directory (usually C:\ado\personal).
 - c. Copy the weai.ado and weai.sthlp files to your personal ado-directory.
 - d. Type help weai in Stata to open the help file. This confirms that the ado-file was properly installed.
2. To run the “weai” command you need to specify the following:¹⁰
 - a. the names of your indicators within each domain
 - b. the empowerment cutoff (equal to 0.80 unless you are missing pro-WEAI indicators)
 - c. the name of your variable and values that identify the sex of the respondents (usually sex)
 - d. the name of your household identification variable (usually hhid)

The code will need to take the following form:

```
weai d1(indicator_1 indicator_2 indicator_3) d2(indicator_4 indicator_5 indicator_6 indicator_7 indicator_8  
indicator_9) d3(indicator_10), cutoff(#) gender(gender_variable) fsex(#) msex(#) hhid(hhid_variable)
```

For example:

```
. weai d1(autonomy_inc selfeff never_violence) d2(feelininputdecagr assetownership  
> credit_accdec incomecontrol work_balance mobility) d3(groupmember), cutoff(0.8)  
> sex(sex) female(2) male(1) hhid(hhid)
```

When the above code is run, it will return a table reporting population-level statistics, disaggregated by sex, such as total observations, the 3DE index, and the mean disempowerment score.¹¹ The command will create 4 individual-level variables in the dataset: emp_score (empowerment score), empowered (individual’s empowerment status), hh_ineq (intrahousehold inequality), and gender_parity (individual’s gender parity status). If “weai” is subsequently run again, under different settings, the observations in these variables will be written over, reflecting the new version of WEAI being calculated. You can also run the command with the *details* option at the end, which will return additional tables displaying the censored and uncensored inadequacy headcount ratios, and the relative contribution of each indicator

¹⁰ Since Pro-WEAI indicators are always equally weighted, it is not necessary to specify indicator weights within the “weai” command. However, this specification is necessary to calculate other versions of the index, such as the WEAI and A-WEAI.

¹¹ The full list of statistics reported by the “weai” command is given in Table 3, excepting the rows appearing in red font.

to disempowerment, as well as a figure displaying absolute contribution to disempowerment. Adding “details” to the “weai” command looks like this:

```
. weai d1(autonomy_inc selfeff never_violence) d2(feelinputdecagr assetownership  
> credit_accdec incomecontrol work_balance mobility) d3(groupmember), cutoff(0.8)  
> sex(sex) female(2) male(1) hhid(hhid) details
```

Additionally, all tables displayed in the Stata output window are exported as a Microsoft Word document and saved in the working directory as "Summary results.docx". Related figures are saved in GPH format in the working directory as "weai.gph." This allows users to customize the figure(s) as needed using the Stata graph editor. Existing copies of these files in the working directory will be overwritten. Users should ensure all such files are closed prior to executing the command to avoid an error.

How to decompose using alternative grouping variables

One of the most useful features of the pro-WEAI is its decomposability. This feature allows users to understand not only which groups of individuals are empowered or disempowered, but also how each indicator and domain contributes to their disempowerment. This is particularly useful for designing policy interventions that address the most binding constraints to empowerment in agriculture.

The “weai” command decomposes the 3DE index by gender, but it is also possible to decompose the results using alternative grouping variables. Examples of possible grouping variables include:

- Education, ethnicity, race, class, age group, and other individual characteristics
- Primary agricultural activity, poverty status, income quintile, and other household characteristics
- Strata, region, and other location characteristics, but only IF the survey is representative at these levels

To construct decomposed scores using a grouping variable, simply use the “by” option

```
. weai d1(autonomy_inc selfeff never_violence) d2(feelinputdecagr assetownership  
> credit_accdec incomecontrol work_balance mobility) d3(groupmember), cutoff(0.8)  
> sex(sex) female(2) male(1) hhid(hhid) by(project)
```

Here, “project” is the variable name corresponding to the grouping variable. Make sure that “group” is coded in integers beginning with “1”. Stata will return a table with all empowerment results decomposed by your chosen variable.

Part D: Interpreting pro-WEAI results

In this section we present the standard tables generated by the “weai” command for reporting pro-WEAI results and explain how to interpret them. Table 5 reports the main empowerment results for a hypothetical impact evaluation. Hence, the results are decomposed by treatment and control; however, for monitoring changes in empowerment over time, the results could just as easily be decomposed by baseline and endline, or any other relevant comparison. The results are fictional and for demonstration purposes only. To identify the areas that contribute most to disempowerment

for women and men, we decompose the disempowerment score (M_0) by domain in Table 5. Drawing from the decomposition presented in Table 5, Figure 1 (shown later in this section) visually presents the configuration of the disempowerment of women and men.

Table 5 includes all statistics produced by the “weai” command (in black), as well as additional statistics (in red). The latter statistics can be manually calculated based on the “weai” command results as explained below. We include both sets of results here to demonstrate that the subindices and components of pro-WEAI can be presented and interpreted both in terms of empowerment and disempowerment. Below are line-by-line explanations of the contents of Table 5.

Note that the “weai” command does not currently support hypothesis testing. This functionality will be added in the near future and user guide updated accordingly with examples. Nonetheless, hypothesis testing can be manually conducted using standard methods (for example, `ttest` command in Stata) for all of the reported results excluding the aggregate indices (e.g., Pro-WEAI, 3DE, GPI) by utilizing the `emp_score` (empowerment score), `empowered` (individual's empowerment status), `hh_ineq` (intrahousehold inequality), and `gender_parity` (individual's gender parity status) variables created by the “weai” command.

Table 5. Example: Pro-WEAI results

	Indicator	Control		Treatment	
		Women	Men	Women	Men
	Number of observations	819	683	834	697
	Three Domains of Empowerment (3DE)	0.58	0.75	0.51	0.79
	Disempowerment index (M_0)	0.42	0.25	0.49	0.21
	% achieving empowerment	19%	40%	13%	47%
	% not achieving empowerment (H_p)	81%	60%	87%	53%
	Mean empowerment score	0.54	0.67	0.50	0.70
	Mean empowerment score among disempowered	0.48	0.58	0.45	0.60
	Mean disempowerment score among disempowered (A_p)	0.52	0.42	0.55	0.40
	Number of dual-adult households	683		697	
	Gender Parity Index (GPI)	0.68		0.61	
	% achieving gender parity	30%		26%	
	% not achieving gender parity (H_{GPI})	70%		74%	
	Mean intrahousehold inequality score	0.32		0.36	
	Mean empowerment gap (I_{GPI})	0.46		0.53	
	Pro-WEAI	0.59		0.52	

Note: Results are fictional and for demonstration purposes only. Statistics in red are not automatically produced by the “weai” command. The mathematical formulas are as follows: Three Domains of Empowerment: $(1 - (H_p \times A_p))$; % achieving empowerment: $(1 - H_p)$; Mean empowerment score among disempowered: $(1 - A_p)$; Gender Parity Index: $(1 - H_{GPI} \times I_{GPI})$; % achieving gender parity: $(1 - H_{GPI})$; Pro-WEAI: $(0.9 \times 3DE + 0.1 \times GPI)$.

Number of observations

In this sample we have 819 women and 683 men in the control group and 834 women and 697 men in the treatment group that have complete information for all pro-WEAI indicators and whose data, thus, contributes to the 3DE score.

Three Domains of Empowerment Index (3DE)

In this example, women in the control group have a 3DE score of 0.58, while men in the control group have a 3DE score of 0.75. This indicates that men in this sample are more empowered than women. Men could achieve this higher empowerment status by either having more men that achieve empowerment or by having higher empowerment scores among disempowered men. In the treatment group we see that women have a 3DE score of 0.51 and men have a 3DE score of 0.79. As in the control group, men in the treatment group are more empowered than women. We can also compare within gender across treatment and control. This comparison shows that women in the treatment group have a lower 3DE score than those in the control group. Women in the treatment group are therefore faring worse in terms of their empowerment compared to the treatment group. However, men in the treatment group have a higher 3DE score than those in the control group, indicating that treatment men fare better than control men.

Disempowerment Index (1 – 3DE)

In the control group, the disempowerment index is 0.42 for women and 0.25 for men. In the treatment group, it is 0.49 for women and 0.21 for men. As this index is simply the 3DE score subtracted from one, it reflects the same information as the 3DE score, namely, that men are more empowered than women in both groups, and that women in the treatment group are more disempowered than women in the control group, while men in the treatment group fare better than their counterparts in the control group.

% Achieving Empowerment

The % achieving empowerment is the proportion of the sample that meets the cut-off of being adequate in at least 8 indicators. 19 percent of women in the control group and 13 percent of women in the treatment group achieve empowerment. Women in the treatment group are less likely to be empowered than their counterparts in the control group. 40 percent of men in the control group and 47 percent of men in the treatment group achieve empowerment. Men in the treatment group are more likely to be empowered than those in the control group. Across both the treatment and control groups men are more likely to be empowered than women.

% Not Achieving Empowerment

The % not achieving empowerment is equal to the % achieving empowerment subtracted by one, and as such, 81 and 87 percent of women do not achieve empowerment in the control and treatment groups, respectively, compared to 60 and 53 percent of men. This reflects the same information as the % achieving empowerment, which is that the percentage of disempowered women is higher in the treatment group than in the control group, and conversely, more men are disempowered in the control group than in the treated group.

Mean Empowerment Score

In the case at hand the mean empowerment score for women in the control group is 0.54 and the mean empowerment score for women in the treatment group is 0.50. This means that on average women in the control group are adequate in 54% of indicators or 5.4 indicators while women in the treatment group are adequate in 50% of the indicators of 5 indicators. Women in the control group therefore fare better than those in the treatment group as they are adequate in more indicators, on average.

The mean empowerment score for men in the control group is 0.67 and the mean empowerment score for men in the treatment group is 0.70. This means that on average men in the control group are adequate in 67% of indicators or 6.7 indicators while men in the treatment group are adequate in 70% of the indicators of 7 indicators. Women in the treatment group therefore fare better than those in the control group as they are adequate in more indicators, on average. In addition, men in both the treatment and control groups fare better than women.

Mean Empowerment Score among Disempowered

We see that disempowered women in the control group have an empowerment score of 0.48. This indicates that disempowered women in the control group are, on average, adequate in 48% of the indicators. Disempowered women in the treatment group have an empowerment score of 0.40. This indicates that disempowered women in the treatment group are, on average, adequate in 40% of the indicators. Disempowered women in the treatment group perform worse than disempowered women in the control group. Disempowered men have an empowerment score of 0.58 and 0.60 in the control and treatment groups, respectively.

Mean Disempowerment Score among Disempowered

Being equal to the mean empowerment score among disempowered women subtracted from 1, disempowered women in the control group have a disempowerment score of 0.52, compared to 0.55 in the treatment group. Disempowered men have disempowerment score of 0.42 and 0.40 in the control and treatment groups, respectively.

Number of Dual-Adult Households

The control and treatment groups in the sample include, respectively, 683 and 697 dual-adult households, i.e., households in which both female and male adults reside and who have complete information for all pro-WEAI indicators and whose data, thus, contributes to the GPI.

Gender Parity Index (GPI)

The GPI reflects both the percent of households achieving gender parity as well as the mean empowerment gap. The GPI reflects the extent (prevalence) and intensity (depth) of gender parity in the sample. The Gender Parity Index (GPI) is 0.68 in the control group and 0.61 in the treatment group. The results indicate that the control group fared better with respect to gender parity.

Percent Achieving Gender Parity

A woman achieves gender parity if either she is empowered or her empowerment score is at least equal to the empowerment score of her spouse/partner. This means that all empowered women have achieved gender parity. 30% of women in the control group achieve gender parity. This includes the 19% of women that are empowered and an

additional 11% that are not empowered but have an empowerment score that is at least equal to their partners¹². In the treatment group 26% of women achieve gender parity. Therefore more women achieved gender parity in the control group compared to the treatment group, by 4 percentage points (or ~15%). Women in the control group are more likely than those in the treatment group to achieve gender parity.

Percent Not Achieving Gender Parity

The percent not achieving gender parity is simply the percent achieving gender parity, subtracted from 1. Therefore we see that in the control group, 70% of women do not achieve gender parity, compared with 74% in the treatment group who do not achieve gender parity.

Mean Intrahousehold Inequality Score

The mean inequality score is the mean difference between the empowerment scores of a woman and her husband/partner. This score includes the entire sample of dual-adult households, regardless of parity status. A positive score indicates that a husband is more empowered than his wife. The mean intra-household inequality score in the control group and treatment group is 0.32 and 0.36 respectively. This indicates that on average, men in the control (treatment) group are adequate in 32% (36%) more indicators than their female household member.

Mean Empowerment Gap

The mean empowerment gap is the mean intra-household inequality score for households that do not achieve gender parity. This gives us an idea of the performance of households that do not meet gender parity. In the control group 70% of households do not achieve gender parity. The empowerment gap is the mean intra-household inequality score for those households only. Similarly, in the treatment group the mean empowerment gap is the mean intra-household inequality score for the 74% of households that do not achieve gender parity. The mean empowerment gap for the control and treatment groups, respectively, are 0.46 and 0.53, indicating that among households that do not achieve gender parity within each group, there is a greater empowerment gap between the woman and the man in the treatment group.

Pro-WEAI

The pro-WEAI score is the weighted average of the GPI and 3DE, where the 3DE receives 90% of the weight and the GPI 10% of the weight. The pro-WEAI score therefore encompasses the two elements of the 3DE, the percent achieving empowerment and the empowerment score among the disempowered, and the two elements of the GPI, the percent of households achieving gender parity as well as the mean empowerment gap. As the 3DE reflect the extent (prevalence) and intensity (depth) of individual empowerment in the sample and the GPI reflects the extent (prevalence) and intensity (depth) of gender parity in the sample, the pro-WEAI reflects both the extent and intensity of empowerment taking gender parity into consideration. In our sample the pro-WEAI score is lower in the treatment group compared to the control group. This indicates that women in the treatment group have lower agency than those in the control group.

¹² Note that of the 19% empowered women some portion may also have an empowerment score that is at least equal to their partner's empowerment score.

From the GPI and 3DE results we know that this result is driven by both lower gender parity in the treatment group and well as lower individual empowerment compared to the control group. **Error! Not a valid bookmark self-reference.** shows the headcount ratios and relative contributions of each indicator to disempowerment. The statistics in this table are returned when the “weai” command is run in Stata with the details option.

Table 6. Headcount ratios and relative contributions of each indicator to disempowerment

Indicator	Uncensored inadequacy headcount ratio (%)		Censored inadequacy headcount ratio (%)		Relative contribution to disempowerment (%)		Indicator weight
	Men	Women	Men	Women	Men	Women	
<i>Intrinsic agency</i>							
Autonomy in income	33.6	43.7	26.5	39.3	12.32	9.50	0.1
Self-efficacy	35.8	50.3	28.6	46.5	13.12	11.27	0.1
Attitudes about IPV against women	32.6	47.5	25.5	45.6	11.79	11.14	0.1
<i>Instrumental agency</i>							
Input in livelihood decisions	7.2	18.2	5.8	18.2	3.18	4.43	0.1
Ownership of land and other assets	2.1	21.6	1.1	20.3	0.40	4.94	0.1
Access to and decisions on financial services	24.1	40.3	18.6	39.1	8.61	9.50	0.1
Control over use of income	13.4	33.2	11.1	32.4	5.17	7.85	0.1
Work balance	33.5	61.5	24.2	55.5	11.13	13.55	0.1
Visiting important locations	31.8	59.5	25.4	53.4	11.79	12.92	0.1
<i>Collective agency</i>							
Group membership	61.7	64.8	44.9	61.6	22.52	14.94	0.1

Notes: Results are fictional for illustrative purposes only. The censored headcount ratio reflects the percent of respondents who are both disempowered and inadequate in the indicator. Uncensored headcount ratio reflects the percent of respondents who are inadequate in the indicator.

Uncensored Inadequacy Headcount Ratio

The uncensored headcount ratio reflects the percent of respondents who are inadequate in the indicator. As shown in Table 6, *group membership* is the indicator for which the highest proportions of both men and women are inadequate. Large gaps exist for several indicators, including *ownership of land and other assets*, in which only 2.1% of men are inadequate, compared with 21.6% of women. Notably, there are no indicators in which a greater proportion of men are inadequate than women.

Censored Inadequacy Headcount Ratio

The censored headcount ratios, shown in Table 6, reflect the percent of respondents who are both disempowered and inadequate in the indicator. Once again, *group membership* has the highest headcount ratio for both men and women, although the censored inadequacy headcount ratio for men for this indicator, 44.9%, is significantly less than the uncensored ratio for men in the same indicator, 61.7%. Once again, there are no indicators in which a greater proportion of men are inadequate for the indicator, and disempowered in general, than women.

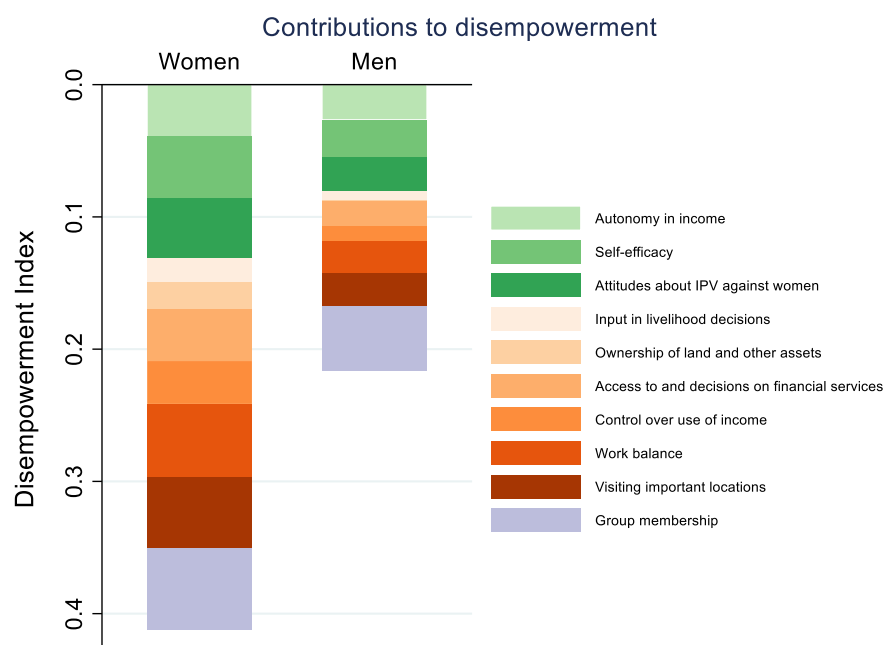
Relative Contributions to Disempowerment

The relative contribution to disempowerment (%) indicates what portion of the disempowerment index (1-3DE) each indicator accounts for, using the censored headcount ratios. As the weight of each indicator in pro-WEAI is 0.1, the relative contributions of each indicator to disempowerment can be said to be disproportionately high or low relative to 10%. As shown in Table 5, the lowest relative contribution to disempowerment is 4.43%, from the *input in livelihood decisions* indicator. Because this contribution is lower than 10%, it suggests that disempowered women are disproportionately less inadequate in this indicator compared to other indicators. Conversely, the relative contribution of 22.52% towards men's disempowerment from the *group membership* indicator suggests that disempowered men are disproportionately more inadequate in this indicator compared to other indicators.

Absolute Contributions to Disempowerment

The absolute contributions to disempowerment for each indicator, shown in Figure 1, are equal to the censored inadequacy headcount ratios, multiplied by the indicator weight, which is 0.1 for each indicator. Therefore, rather than comparing indicator ratios within the sample of men or women, absolute contributions allow for the visual comparison of disempowerment across sex. As shown in Figure 1, the disempowerment index for women is nearly twice that for men, and the absolute contribution made by each indicator to the total disempowerment index is greater for women than for men. For both men and women, the greatest absolute contribution to disempowerment is made by the *group membership* indicator.

Figure 1. Absolute Contributions to Disempowerment



Note: Results are fictional and for demonstration purposes only. The absolute contribution of an indicator to disempowerment is equal to the censored inadequacy headcount ratio for that indicator, multiplied by the indicator weight. The "total disempowerment" axis measures contributions to the disempowerment index (1-3DE).

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