Terms of Reference

Background/Context

UN Women, grounded in the vision of equality enshrined in the Charter of the United Nations, works for the elimination of discrimination against women and girls; the empowerment of women; and the achievement of equality between women and men as partners and beneficiaries of development, human rights, humanitarian action and peace and security.

Placing women's rights at the center of all its efforts, and in line with the ongoing UN Reform, UN Women leads and coordinates the United Nations system efforts in Kenya to ensure that commitments on gender equality and gender mainstreaming translate into action. It provides strong and coherent leadership in support of Kenya country office priorities and efforts, building effective partnerships with civil society and other relevant actors.

UN Women Kenya and FAO Kenya are jointly implementing a Korea International Cooperation Agency (KOICA) funded four-year project on Women's Economic Empowerment through Climate-smart Agriculture (WEE-CSA) that started in 2020. The project, implemented in partnership with the Ministry of Agriculture, Livestock, Fisheries and Cooperatives and State Department for Gender complements and builds on the ongoing Climate-Smart Agriculture (CSA) work in three counties namely Kitui, Laikipia and West Pokot.

The project aims to strengthen the national and county government's capacity to provide a gendered perspective and promote gender equity and equality in the adoption and implementation of climate-resilient agriculture approaches as an effort to build resilience and adapt to climate change in the ASALs. More specifically, the project aims to:

i) Strengthen the capacity of direct beneficiaries who are 2400 farmers, [80% female farmers and 20% male farmers], 800 per each county, and their family members to build sustainable economic livelihoods from climate-smart agriculture approaches and along priority agricultural value chains, including the adoption of CSA and climate change adaptation (CCA) technologies and practices.
ii) Support women to participate in decision-making of CSA-related policy interventions fully and equally at all levels.
iii) Strengthen the capacity of key institutions to mainstream gender in national and local adaptation plans, related policies, strategies, and systems.

The WEE-CSA project envisioned a results-based monitoring approach that will promote greater accountability on results with verifiable information thus a robust M&E system was set up to strengthen upward and downward accountability to key stakeholders. As part of M&E, baseline, mid-term, and end-line studies were planned to track and assess progress towards achievement of project results. Subsequently, a baseline study was conducted between April and September 2021 to collect data on a set of key performance indicators that will inform program implementation. In particular, the study established benchmarks upon which progress will be measured, informed the selection of project sites and identified priority value chains per county. Additionally, an impact evaluation baseline study was conducted in 2022 utilizing the Difference in Differences (DiD) econometric analysis methodology.

To demonstrate the extent to which the WEE-CSA project has been effective in improving women's empowerment, agricultural productivity and food and nutrition security, an impact evaluation has been considered. Therefore, the impact evaluation end-line study will utilize the DiD.

This document presents the Terms of Reference for conducting an impact evaluation end-line study. The purpose of the consultancy is to develop the impact evaluation end-line study framework based on the project goals and targets; to review the available data and to assess the data gaps; to develop the tools and to oversee the data collection, to analyze data and to prepare an impact evaluation end-line study report while utilizing the DiD approach. Whilst the project entry point is communities, outcomes and changes will be measured at the household level. Some beneficiaries are organized in farmer groups as follows: - Total target: Kitui, 40 groups of 911 farmers (761 Female, 150 Male, 398 Youth, 94 persons with disabilities/PLWD); Laikipia, 41 groups of 988 farmers (888 Female, 100 Male, 394 Youth, 80 PLWD); West Pokot, 27groups of 809 farmers (697 Females, 112 Males, 453 Youth, 70 PLWD).

Theory of Change

Overall, the project is being premised on the following theory of change: if (1) climate-smart agriculture and climate adaption are gender-responsive; if (2) women have access to climate-resilient livelihoods, productive assets, technologies, and skills, and this is supported by enabling social norms and practices; then (3) women and girls affected by climate change will play a leadership role and benefit from CSA and climate change adaptation (CCA) efforts; because (4) adaptive capacity to climate change will be enhanced and women's rights and needs will be at the centre of climate-smart agriculture and climate adaption strategies and priorities.

Description of project Locations

Kitui

Kitui County covers an area of 30,496.4 km2 and lies between latitude 00 10' and 30 South and longitude 370 50' East. The County borders Tharaka Nithi to the North, Taita Taveta to the South, Tana River to the East, and Makueni and Machakos to the West and Northwest respectively. The county's population is 1,136,187 (2019 KPHC), with 51.7 per cent female and 48.3 per cent male.

The WEE-CSA project sites are Kauwi ward (380 beneficiaries) in Kitui West and Mutomo/Kibwea (221 beneficiaries) and Athi wards (310 beneficiaries) in Kitui South. The areas are generally classified as semi-arid but with good potential for agricultural development. Due to erratic and unreliable rainfall, production of drought-tolerant crops and livestock keeping is prevalent in these areas with the drier areas more suited for livestock rearing.

Laikipia

Laikipia County borders Samburu County to the North, Isiolo County to the Northeast, Meru County to the East, Nyeri County to the Southeast, Nyandarua County to the South, Nakuru County to the Southwest and Baringo to the West. It covers an area of 9,462 km2 with a total area of 580 km^2 forming the county's total forest cover. The county's population is 518,560 (2019 KPHC), with 49.97 per cent female and 50.03 per cent male. Three wards are targeted under the WEE-CSA project 41 groups: 988 farmers – 888 female, 100 male, including 394 youth and 80 PLWDs.

West Pokot

West Pokot County is situated in the North Rift along Kenya's Western boundary with Uganda border. It borders Turkana County to the North and Northeast, Trans Nzoia County to the South, Elgeyo Marakwet County and Baringo County to the Southeast and East respectively. The County lies within Longitudes 34° 47'and 35° 49' East and Latitude 1° and 2° North and covers an area of approximately 9,169.4 km2. The county's population is 621,241 (2019 KPHC), with 50.6 per cent female and 49.4 per cent male. The three wards targeted 27 groups: 809 farmers- 697 female, 112 male, including 453 youth and 70 PLWDs.

Context

Building on the impact evaluation baseline study (2022) and the rapid assessment (2023) conducted in the three target counties, UN Women Kenya, in partnership with FAO Kenya, is recruiting a consultant to undertake an impact evaluation end-line study which will determine the changes resulting from the intervention by utilizing the DiD approach. The impact evaluation will assess the key outcomes of individuals before they are exposed to the intervention (treated) and those not exposed to the intervention (control). The impact evaluation study will also assess and update the status of household-level and group-level performance using a set of additional indicators, as listed in Annex 1.

Purpose and methodology

This section outlines the purpose of this end-line study and the methodology. It also describes the methods for analysing the data. The purpose of this end-line study is:

- To collect end-line values for key project indicators as per the log frame.
- To determine changes in the key indicators and assess the impact of the project through econometric methods, including but not limited to the DiD.

Design, sample size and sample frame

The target location for the assignment is composed of three counties in Kenya, namely, Kitui, Laikipia and West Pokot. In the design of the impact evaluation strategy, panel data (baseline and end-line) with intervention respondents i.e.: those that receive full intervention/beneficiaries and non-intervention, who do not receive interventions was envisaged. During the baseline study, the intervention groups were sampled randomly from the beneficiary lists derived from the project's implementation locations while the non-intervention groups were randomly sampled from different communities with similar characteristics as the treatment groups to minimize spillover of the benefits. The beneficiaries were sampled in two levels, random selection of groups and then random selection of group members. The following number of respondents were reached during baseline:

Table 1: Baseline sample size

County	Beneficiaries	Non-Beneficiaries	Total
Kitui	137	69	**206**
Laikipia	166	66	**232**
West Pokot	95	80	**175**
Total	**398**	**215**	**613**

The survey questionnaire used during the impact evaluation baseline was prepared in English and local languages and was implemented on the Kobo Collect platform (https://www.kobotoolbox.org). The questionnaire will require approximately 45 minutes to administer, capturing basic households' demographic characteristics and detailed information on their livelihoods. These included a range of questions on land use and management, crop production, livestock, household inputs, and assets, CSA technologies and practices, off-farm income, hired labor, transfers, decision-making, women empowerment, food security, and credit. The survey needed one main respondent only per household. End-line data collection will be carried out by interviewing the same set of households interviewed at baseline. The FAO/UN WOMEN will provide the geographic coordinates recorded at the time of the baseline and the telephone numbers of the respondents. These tools will facilitate re-contact with the respondents and ensure low levels of attrition.

The consultant will be reporting to the UN Women M&E Analyst and will be supported by the Women's Economic Empowerment (WEE) Programme Assistant, who will be the point of contact on the contract and payment issues.

Description of Responsibilities/ Scope of Work

Specifically, the Consultant will undertake the following tasks:

- Carry out a Desk Review of key documents relevant to the work such as the WEE-CSA Project document, baseline study report, the DiD study report, the rapid assessment report, the Performance Monitoring Plan (PMP), project progress reports, Project Steering Committee minutes/report, CSA-related policy, and strategy documents and relevant DiD method guidance documents to determine the available data to utilize the DiD approach for the impact evaluation end-line study.
- Prepare an inception report for the impact evaluation end-line study with a DiD perspective, including the overall scope, approach, sampling design, schedule, and a detailed outline of the report.
- Refine the data collection tools that were used during the impact evaluation baseline study (soft copy and mobile-based) and develop an analysis plan to enable the DiD analysis to be conducted.
- Prepare the list of the respondents/households (treatment and control) that were visited during the impact evaluation baseline study to be followed up during the impact evaluation end-line study.
- Develop the model, parameters, and econometric regressions (in STATA) to be utilized for analysis in the impact evaluation end-line study including the development of the period for data collection for both the control and treatment groups including the ability to take into control for any spillover effects.
- In collaboration with the UN Women and FAO field officers conduct identification, training, and remuneration of specific county-based survey enumerators for Laikipia, Kitui, and West Pokot counties and field testing of the data collection tools.
- In partnership with the UN Women and FAO field officers, coordinate, and support supervision of data collection in the three target counties.
- Undertake data quality control measures including running data quality checks and providing feedback to the enumerators.
- Clean the data, analyze, and produce a draft impact evaluation end-line study report based on the data analysis plan. This includes indicator-specific analysis by county and beneficiary status, as well as indicator-wide aggregates (or means). The end-line should include an estimate of the impact of the program across the outcome indicators, based on the DiD approach, including significance testing.
- Provide UN Women/FAO with the STATA codes and impact evaluation end-line study raw data.
- Lead a stakeholder validation meeting to present the findings and solicit inputs to inform the final report.
- Revise the draft impact evaluation end-line study report based on comments received from the key stakeholders.
- Derive an academic paper from the report.

Deliverables

Describe the final product/s or deliverables (e.g., survey completed, workshop conducted, data collected, reports written, etc.), in the form of SMART indicators to facilitate review of and approval of deliverables.

***S**pecific: The indicator clearly and directly relates to the outcome. It is described without ambiguities. Parties have a common understanding of the indicator.*

***M**easurable: The indicator has the capacity to be counted, observed, analyzed or tested.*

***A**chievable/Attributable: Are results realistic? Can changes in the targeted developmental issue can be linked to the intervention?*

***R**elevant: An indicator should be a valid measure of the result/outcome…*

***T**ime-bound: Every deliverable has a specific timeline for completion.*

Activity/Deliverables	Tentative Timelines	Estimated Number of Working Days	Payment Schedule Percentage %
♦ Desk Review and meeting with key project staff	8th - 12th April 2024	12 days	1st installment of the consultancy fee - 15% after submission of the inception report[1] Fieldwork (enumerators fees) will be paid as follows. Lumpsum payment for the fieldwork - 100% upon submission of the inception report and
♦ Elaborate sampling design	8th -12th April		
♦ Survey Personnel Training Report	15th - 19th April		
♦ Impact Evaluation end-line study data collection tools (including the data collection tools)	8th - 19th April		
♦ Impact evaluation end-line study Inception Report ♦ Enumerators who will conduct field work data collection will be identified, managed and paid by the consultant in line with UN Women's regulations and rules (UBN Women).	8th - 17th April 2024		

[1] Inception report should include: i. Refined data collection tools that were used during the impact evaluation baseline study (soft copy and mobile-based) and develop an analysis plan to enable the D-i-D analysis to be conducted. ii. Prepare the list of the respondents/households (treatment and control) that were visited during the impact evaluation baseline study to be followed up during the impact evaluation end-line study. Iii. Develop the model, parameters, and econometric regressions (in STATA) to be utilized for analysis in the impact evaluation end-line study including the development of the period for data collection for both the control and treatment groups including the ability to take into control for any spillover effects.

			signed enumerators' contracts.
♦ Conduct field work data collection, review and data analysis with enumerators.	20th April – 10th May	27 days	2nd installment of the consultancy fee - 85% upon the submission of the approved end-line report.
♦ Draft impact evaluation end-line study report	22nd April – 20th May		
♦ Present draft study report to the reference group for discussion and feedback.	21st May 2024	1 day	
♦ Cleaned and raw end-line data accompanied by Stata do-files. ♦ Incorporate feedback from reference group into the report	22nd May – 28th May 2024		
♦ Prepare impact evaluation end-line study report and presentations for stakeholders meeting.		2 days	
♦ Prepare and disseminate the final impact evaluation to stakeholders	28th May	1 day	
♦ Incorporate recommendations from the stakeholder's engagement into the report.	29th May 2024 – 6th June	1 day	
♦ Present the final impact evaluation end-line study report and supporting documents to UN Women.	7th June 2024	1 day	
Total		**45 days**	**100%**

Consultant's Workplace and Official Travel

This is a home-based consultancy. As part of this assignment, there will be a maximum of four trips in Kenya as per the agreed schedule. The trips will be to the three project locations (West Pokot, Laikipia and Kitui) and one to the location where the project steering committee meeting will be held.

Annex 1: Evaluation Matrix

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
Did WEE-CSA improve gender responsiveness in Climate-smart policies and regulations to enable investments in climate-resilient agriculture at the national, county and Community level?	**1.1 The increased capacity of national and 3 County Governments on gender-responsive CSA and CCA policy development and implementation**	1.1.1 Number of county governments that implement a gender-responsive system (laws and polices) on CSA policies and strategies (3 county governments)	3 county governments: West Pokot (2022), Laikipia (2022), Kitui (2022)	County policy implementing plans in place. Gender-responsive budget in place to implement the CSA and gender-responsive agriculture strategies. CSA GWG reports.	**Document review:** documents provided by the CSA Gender Working Group **Quantitative analysis** - the proportion of women investing in Climate-smart Agriculture.
		1.1.2 Number of County government staff who participate in the specialized workshop (on domestication and engendering of national-level policies and strategies on climate resilience) Baseline: 0 Target: 300 persons (50% women) for 3 counties	Sex, age, differently abled persons (DAP) and county	Workshop participation lists, activity tracking	Tallying- number collected from secondary reports on training and capacity building.
		1.1.3 Number of County government staff who participate in specialized workshop (gender-responsive CSA policies) Baseline: 0 Target: 300 persons (50% women) for 3 counties	Sex, differently abled persons (DAP) and county	Workshop participation lists, activity tracking	Tallying- number collected from secondary reports on staff participating in specialized workshops

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
		Number of guidelines developed Baseline: 0 Target: 1	-	Gender mainstreaming guidelines document	Document review: documents provided by stakeholders in WEE-CSA project
		1.1.4. Number of people reached with CSA gender mainstreaming messages Baseline: 0 Target: 6,000 people (50% women, 1% DAPs)	Sex, age, differently abled persons (DAP) and county	Activity tracking reports and beneficiary data	Tallying- Quantitative- proportion of beneficiaries reporting to have been reached by gender mainstreaming messages.
	1.2. The capacity of Women farmers strengthened to engage in gender-responsive policy planning, implementation and monitoring of CCA and CSA	1.2.1. Number of women participating in the development and implementation of CSA Baseline: 0 Target: 48 women groups (approximately 20 women per group; in total 960 women with 1% DAP)	Sex, age, differently abled persons (DAP) and county	Participant lists from CSA policy meetings. Activity tracking reports (including meeting minutes and feedback from women groups). Beneficiary contact monitoring reports.	**Tallying** - from project progress reports **Quantitative analysis**- the proportion of women reporting to have been engaged in planning and development of CCA and CSA
		1.2.2. Number of women investing and participating in CSA Baseline: 0 Target: 1,500 women farmers 1% DAP	Age, differently abled persons (DAP) and county	Monitoring reports, and group records. Beneficiary contact monitoring reports.	Tallying- from project progress reports Quantitative analysis- the proportion of women investing and participating in CSA.

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
		1.2.3. Number of women with leadership skills to participate in CSA and CCA decision-making Target: Baseline: 960 farmers (women)	Differently abled persons (DAP) and county	Participant lists from CSA policy meetings. Activity tracking reports. Leadership skills assessment report. Beneficiary contact monitoring reports.	Tallying, document review Quantitative analysis- the proportion of women trained on leadership and participation in CSA and CCA decision making.
		1.2.4. Number of radio programmes developed and aired on women investing and participating in CSA Baseline: 0 Target: 9 radio programmes	County	Activity reports by implementing partners (including Radio programs schedule)	Tallying - from progress reports
		1.2.5. Number of local radio stations supported with gender policy Baseline: 0 Target: 3 local radio stations	County	Activity reports by implementing partners	Tallying - from progress reports
Did the WEE-CSA increase agricultural production, income levels, nutrition status and climate resilient livelihoods among the targeted communities?	2. To increase production, income levels, nutrition, and climate-resilient livelihoods among targeted communities	2. Percentage change in agricultural production (Legumes (tons/ha); Cereals (tons/ha); Fodder (tons/ha); Small ruminants (average number of animals per year and/or annual milk production per animal); Poultry (average number of birds per year and/or eggs/hen/year); Honey (kg/hive/year)) **Baseline: TBD** (0.2t/ha -> 2t/ha) Target: TBD	County, sex of principal beneficiary	Baseline survey (and if funds allow end-line survey to be considered) and beneficiary-based household surveys	Quantitative survey data and analysis- the ratio of total production to the total area harvested/planted for all crop value chains.

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
	2.1. Increased technical capacity of women farmer groups to adopt market-driven CSA value chains	2.1.1. Number of extension agents with an understanding of Gender-responsive practices and CSA skills Baseline: Target: 30 extension agents (Baseline in each county is 3, project targets 10 per county)	County, age, sex	Knowledge test results on gender-responsive practices and CSA skills	Tallying - from progress reports
		2.1.2. Number of women engaged in agro-enterprises Baseline: 0 Target: Every year, in each county, at least 70 women	County, age, sex, DAP	Training records, business records	Tallying- from project progress reports Quantitative analysis- proportion of women engaged in agro-enterprises
		2.1.3. Number of farmers utilizing CSA technologies Baseline: 0 Target: 2,400: 2000 F, 400 M farmers (At least in year one 300 women in 3 counties have adopted CSA e.g. vegetable gardens, poultry, DTC crops – sorghum, green grams etc. Thereafter in each county adoption is by at least 30% women)	County, age, sex, DAP	Performance tracking report & triangulated using beneficiary-based surveys	Tallying- from project progress reports Quantitative analysis of survey data - proportion of women utilizing CSA

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
		2.1.4. Number of agricultural technologies adopted Baseline: 3 CSA practices adopted by target groups (DTC and poultry, goats, fodder/agroforestry) in each county Target: 5-10 CSA practices shall be observed among the 10% of the beneficiaries in each county, each year.	County,	Performance tracking report & triangulated using beneficiary-based surveys	Tallying - from the project progress report Quantitative analysis of survey data- Count of the number of CSA practices adopted by the targeted community
	2.2. Women's capacity strengthened to invest and participate in land and water management committees on use of climate-resilient practices to rehabilitate degraded range land	2.2.1. Area (in Hectares) of farm-land under CSA practices Baseline: Target: 768 ha (65% Women cultivating 1/8th Ha plots in Y2 (195Ha), 90% women cultivating 1/8th Ha plots in Y3 (270Ha) and 50%women cultivating 1/4th Ha plots in Y4 (303Ha).	County	Performance tracking report	Tallying - from the project progress report Quantitative analysis of survey data-total area (Ha) under CSA per household with a project beneficiary.
		2.2.2 Number of improved CSA practices (12) Baseline: 0 Target: 12	County	Activity tracking reports.	Tallying - from the project progress report Quantitaive survey data and analysis-Count of number of CSA practices per beneficiary.

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
		2.2.3. Number of women benefitting from water harvesting structures Baseline:0 Target: 200 women (9 farm-ponds per county supporting at least 150 women to manage tree seedlings and vegetable plots; 48 water storage tanks (1000lt capacity each) supporting 50 women in managing tree seedlings and vegetable plots; 50% of beneficiaries have their farms with soil and water conservation structures.)	County, age, DAP	Activity tracking reports	**Tallying** - from the project progress report **Quantitative survey data analysis -** proportion of women benefiting from water harvesting structures.
	2.3. Increased capacity of women value chain actors to access financial services at county and community level	2.3.1. Number of women trained on CSA financial services Baseline: 0 Target: 1,000 women (At least 20 women in each of the 48 group have skills in CSA financial services)	County, age, DAP	Training records	Tallying - from the project progress report. Quantitative survey data analysis - proportion of women trained on CSA financial services.
		2.3.2. Number of women groups aggregating produce along value chain Baseline: Target: 9 women groups (3 groups, per county, each has a small cereal crop motorized thresher; 3 groups, per county,	County, age, value chain	Group records	Tallying - from the project progress report. Quantitative survey data analysis - proportion of women reproting aggregation of produce along the value chains they practice.

Evaluation questions	Results chain	Performance indicators, baselines and targets	Disaggregation	Data source (MOV)	Data Collection and method of Analysis
Evaluation Method Difference in Difference					
		each has an egg incubator)			

Annex 2: Sample Size and Sampling

Sampling process

The end-line used the same sample obtained during the baseline survey. Information regarding the groups reached, membership, and location (wards) was extracted from the secondary sources with the help of the county project staff. During the baseline survey, the project implementation reached 107 groups- Kitui 40 groups in Athi, Kauw'i, and Mutomo wards and composed of 971 members. In Laikipia, 40 groups in Mukogodo East, Tigithi, and Umande wards composed of 975 members, and in West Pokot 27 groups in Batei, Riwo, and Suam wards composed of 809 members.

A sample of 107 groups was obtained from the project records by UN Women and submitted to the consultant for sampling. A random sample size of 65 groups were determined by assuming a 5-member representation in the 365-sample size. The 65 groups were randomly selected from the 107 groups that benefited from the project proportionate to the number of groups in each county. Since there was no listing of the group members, the random selection of the respondent members was left to the chairpersons of the groups who were conducted to identify 5 members from their groups randomly.

Consequently, groups in the comparison wards were identified and profiled. 12 comparison groups were identified in Laikipia, 18 in West Pokot and 7 in Kitui. The case of non-beneficiary groups was however, different since there was no matching number of groups. In a similar approach to the beneficiary group, chairpersons of the groups were conducted to identify members of the group to participate in the survey.

In both cases, chairpersons were guided to randomly select the group members and not necessarily to select their friends or favorites or easy-to-reach members. Available identified non-beneficiary groups were 12 in Laikipia, 18 in West Pokot and 7 in Kitui County. As such, the spread for the non-beneficiary group was 5 members per group in West Pokot, 10 members per group in Laikipia and 16 members per group in Kitui County.

Baseline and End-line Sample distribution

In the baseline, 613 out of 650 sample households were interviewed across the 3 counties during the baseline. In Kitui County, 206 households (69 comparison and 137 beneficiaries) constituting 34% of the overall sample size were reached and interviewed. In Laikipia County, a total of 232 households (66 comparison and 166 beneficiaries) constituting 38% of the total sample size were reached while in West Pokot County, 175 households (80 comparison and 95 beneficiaries) constituting 29% of the total sample households were interviewed. The 613 presented 94% of the total sample size, which was considered negligible to affect the parameters. Women constituted 87% of the households (group members) interviewed and was in line with the project's focus on women.

Sample Distribution- Baseline and End-line.

		Baseline Sample			**End-line Sample**		
County	Ward	Comparison	Beneficiaries	Total	Comparison	Beneficiaries	Total
	Athi		35	35		31	31
	Kauw'i		72	72		53	53
	Mutomo		30	30		26	26
Kitui	Ikutha	19		19	18		18
	Kanziko	20		20	16		16
	Kithumula/Mutonga	30		30	23		23
	Total	**69**	**137**	**206**	**57**	**110**	**167**
	Batei		35	35		33	33
	Riwo		37	37		35	35
	Suam		23	23		17	17
West Pokot	Chepararia	38		38	32		32
	Kapenguria	17		17	17		17
	Kodich	25		25	22		22
	Sub-Total	**80**	**95**	**175**	**71**	**85**	**156**
	Nanyuki	23		23	17		17
	Thingithu	43		43	39		39
Laikipia	Mukongodo East		93	93		83	83
	Tigithi		36	36		25	25
	Umande		37	37		30	30

	Sub-Total	**66**	**166**	**232**	**56**	**138**	**194**
	All Sample	**215**	**398**	**613**	**184**	**333**	**517**
Unmatched					**19**	**7**	
Matched cases					**166**	**326**	**492**
Attrition					**23%**	**18%**	**19%**

Data Quality Checks

- **Timeliness**, the data was collected within the right timeframe- at baseline (at the time the project was starting or had just started) and at the end-line, when the project was at the closing stages. By this timing, the data collected represented an up-to-date representation of the context in the project implementation sites.
- **Uniqueness** - Out of the 613 data entries or cases submitted during the baseline, there were only three (3) duplicates. This meant that the true data entries were 610. Duplicates were identified through an Excel function of the raw data and excluded from the evaluation analysis. On combining the baseline and end-line data, duplicates were necessary and were identified as a match of the respondents between the baseline and end-line to create data akin to a two-time panel data that would allow for before and after comparison or differencing of the quantitative indicators.
- **Accuracy** – The accuracy of the data was ensured through several measures. Initial steps entailed designing data collection tools that were not ambiguous and easy for the respondents. In cases where dummy or categorical data was required, the Kobo-Collect forms were designed to allow for these unique responses. Conditional responses across the questions were also designed to be answered on condition that the primary question was respondent to. In cases where responses were extreme, moderation was considered during analysis. Often, such responses especially in prices and quantities were replaced with median values. These measures ensured, in part, a greater deal of accuracy in the responses. Such an attempt ensured that the data correctly reflected the real context of events for analytical purposes.
- **Consistency –** the data was collected in two phases (baseline and end-line). Thus, it required that cases be consistent over the two-time period as this presented a two-panel data system. Once the two panels were combined., consistency checks in selected variables was made. For example, the age variable of the respondent needed to be two years in difference since the baseline was in August 2022 and the end-line in April 2024 giving an average age difference of about 2 calendar years. A farmer who was interviewed at the baseline and end-line and was 44 years old would be 46 years old at the end-line. Time-invariant variables such as education, sex, and location were also examined to ensure that consistency was observed.
- **Validity –** this entailed checking whether the data conformed to the required formats, values, and standards. The data was downloaded in Excel format from the Kobo-Collect account. The Excel format allowed for upload in STATA for cleaning and analysis after the identification of matching cases between the baseline and end-line files. The names of the respondents were matched. For example, the sample at baseline had not been fed into the online Kobo-Collect account for the end-line evaluation. As such, the enumerators typed the names of the respondents although the typing in the form of case sensitivity and on arrangements of names would differ between the baseline and end-line file. This was cleaned up by matching the names of the respondents through duplicate identification and similarity in names, and location (ward, County, and group name). Being a tedious and time-consuming undertaking, future DiD exercises should endeavor to have a fixed record of the names of respondents once a sample is identified.

Annex 3: KII and FGD Checklists

KII- Extesnion officers and ToTs | M&E and IPs | SMT -FAO | SMT UN Women | FGD- Groups

Annex 4: Graphical Assessment of the parallel trend assumption

In order to evaluate the parallel trend assumption, one needs to have a panel of data that existed before the start of the project. To provide visualizations that can be used to evaluate the parallel trends assumption, data on the outcomes of interest- in this case, agricultural productivity (crops and livestock), and household income, was collected through recall for seasons in 2020 (long and short rains) and in 2021 (short rains) and 2022 (long rains). The short rains occur between October and December while long rains between March and June. These two rain seasons characterize the three counties in which the WEE-CSA program is being implemented.

Crop productivity was estimated as a ratio between the crop output (kilograms) and area (acres) per season and a trend developed from the four seasons in which the data was captured. For the crops, numerous value chains were captured. These were beans, bulb onions, fodder and pastures, green grams, vegetables (indigenous, kale, and spinach), and Irish Potatoes. Livestock-related value chains that were targeted by the WEE-CSA project are dairy goat, Indigenous poultry, meat goat (Galla goat), and honey (apiculture). In addition, products of the poultry value chain –eggs and milk from the dairy goats were also captured as separate products. This is because households usually sell and make a profit from eggs and milk instead of selling live goats or chickens. The productivity in livestock was captured as the number of livestock per household per year. Eggs were counted by a number of eggs produced per household per year, milk from dairy as the number of liters per household per year, and honey was estimated as the kilograms per beehive per year. Table 2 shows the value chains, the estimation of productivity, and the season or year for which the data was captured.

Table 2: Value Chains, Estimation of Productivity

Value chain	Estimation of productivity	Year/Season for which data was captured
Crops productivity (beans, bulb-onions, fodder and pasture, green grams, potatoes and vegetables)	Ratio of production (Kilograms) per unit area (acre)	Seasons: 2020 Short Rains Season 2020 Long Rain Season 2021 Short Rain Season 2022 Short Rains Season
Livestock (dairy goats, meat goats (Galla goat), poultry)	Number per household per year	Year 2020 and 2021
Milk from dairy goat	Liters per household per year	Year 2020 and 2021
Eggs	Number per household per year	Year 2020 and 2021
Honey	Kilograms per hive	Year 2020 and 2021

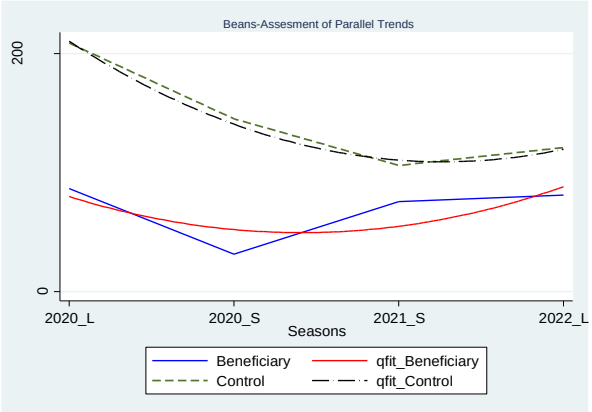
Visualization of the trends was developed over the four seasons (short rainfall 2020, long-rainfall 2020, short rains 2021 and long rains 2020) for the crops and for 2020 and 2021 for livestock related value chains- Table 3. The livestock were captured over the two times because their production does not usually follow the seasonal production like does the crop value chains.

Table 3: Assessment of parallel trend assumptions

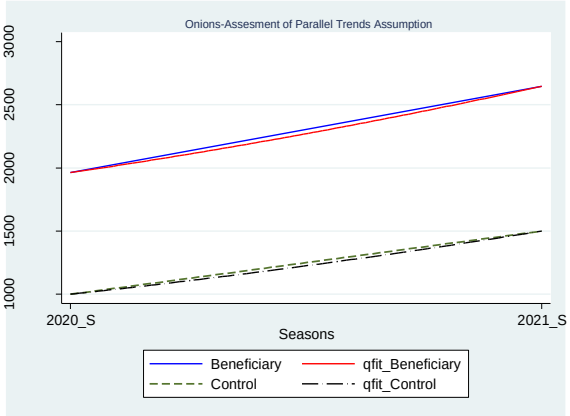
Value chain	Parallel trend evaluation	**Interpretation**
Crops Value Chain		
Beans	Holds	DiD estimates true intervention impact
Bulb onions	Holds	DiD estimates true intervention impact
Fodder and pastures	Indeterminate (no sufficient data)	
Green grams	holds	DiD estimates true intervention impact
Potatoes	Does not hold	DiD Likely to over/underestimate intervention impact
Vegetables	Holds	DiD estimates true intervention impact

Livestock Value Chains		
Dairy goat	Does not hold	DiD Likely to over/underestimate intervention impact
Milk (from dairy goat)	Does not hold	DiD Likely to over/underestimate intervention impact
Doper sheep	Does not hold	DiD Likely to over/underestimate intervention impact
Galla goat (meat goat)	Holds	DiD estimates true intervention impact
Poultry	Holds	DiD estimates true intervention impact
Eggs	Holds	DiD estimates true intervention impact
Honey	Holds	DiD estimates true intervention impact

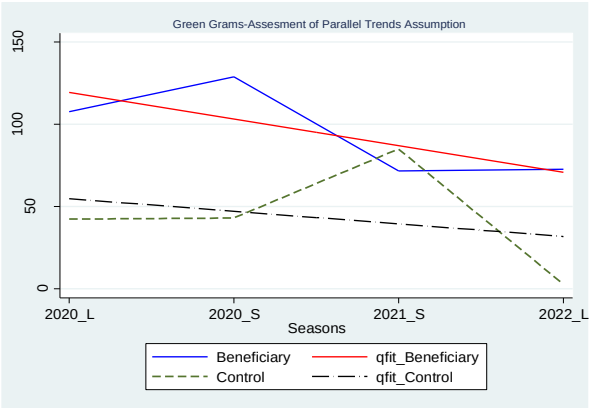
Beans



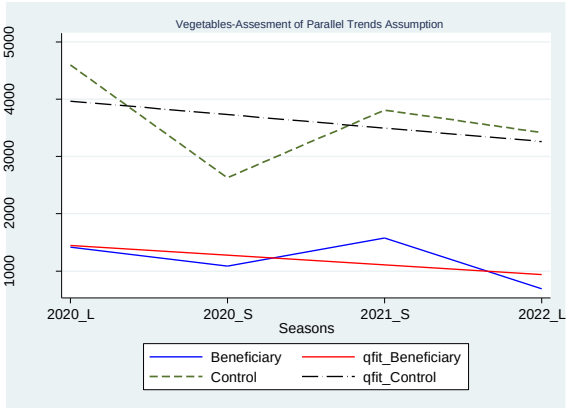
Bulb onions



Green Grams

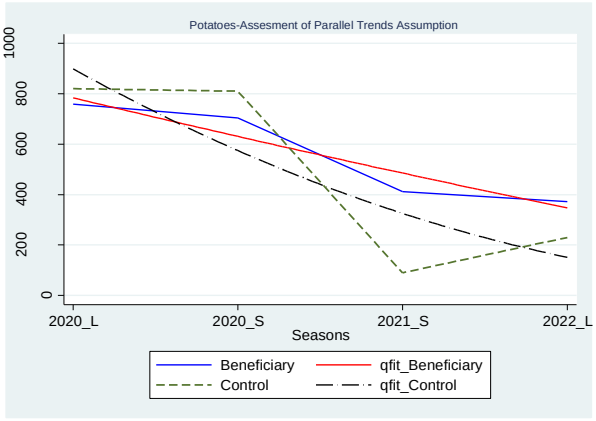


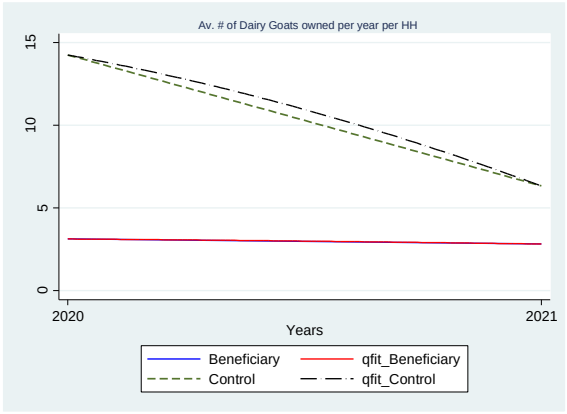
Vegetables



Irish Potatoes

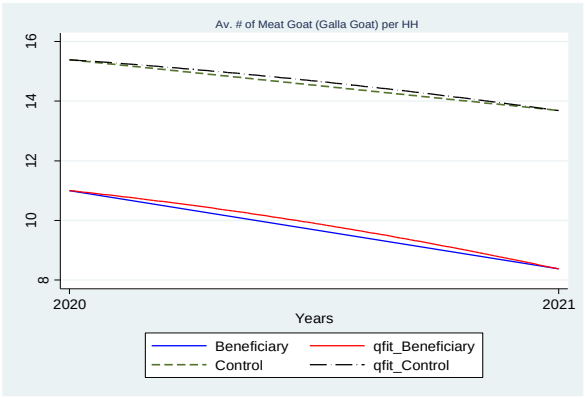
Dairy goats

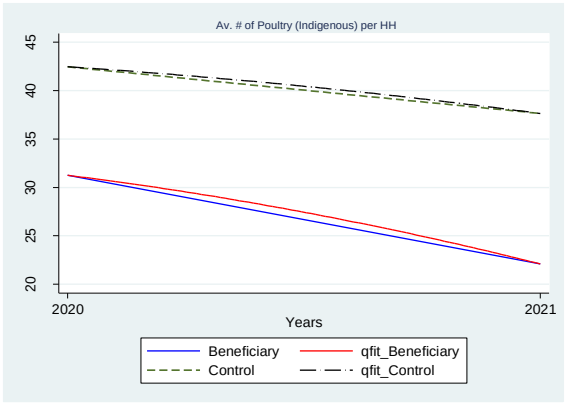




Meat Goats

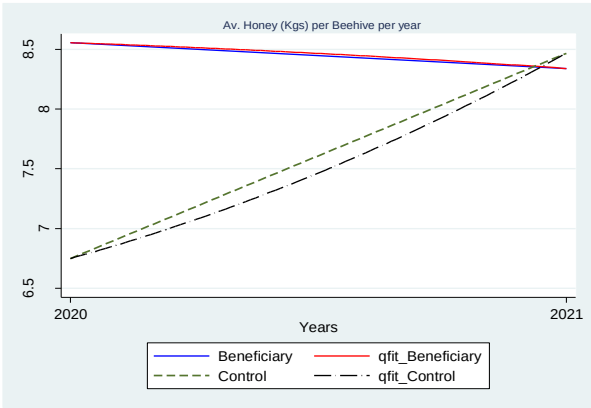
Poultry (indigenous)

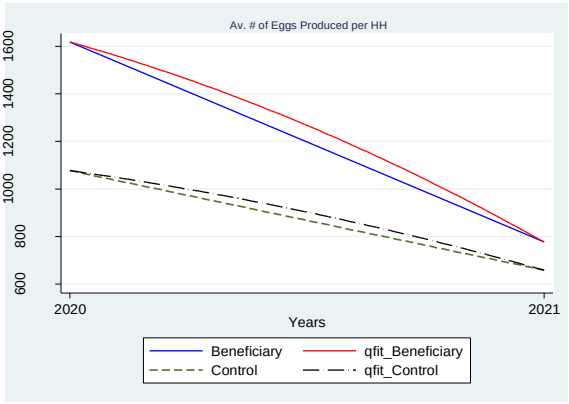




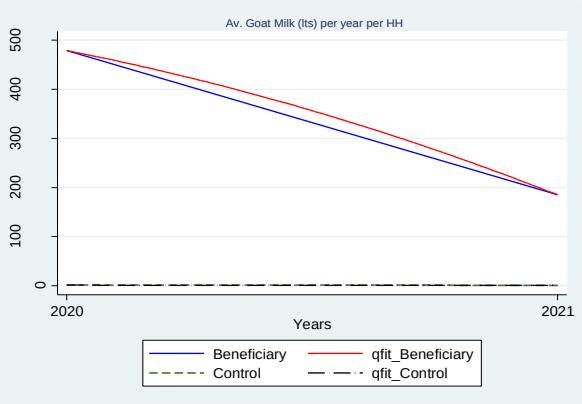
Honey

Eggs





Goat milk



Annex 5: Variables used in the computation of household resilience

Resilience Pillar	Variables description	How the variable is measured
Adaptive Capacity (AC)	Education level of head of household-Number of years of schooling (Never attended=0; Primary level=8; Secondary Level=12; Technical Level=15; and University level=16)	Measured Year of Education
	Dependency Ratio: The ratio between the total number of household members below 15 years or above 65 to the number of household members between 15 and 65 years.	Ratio
	Number of value chains the household is practicing	Number
	Average distance in KM to the nearest market where they sell the farm or livestock produce. Calculated as the average distance from home to the nearest market for households by county.	Measured as the distance (KM) taken to arrive at the nearest market center.
	Distance in KM to the nearest water point-Wet seasons	Measured as the distance (KM) taken to arrive at the nearest water point during Wet season.
	Distance in KM to the nearest water point-Dry seasons	Measured as the distance (KM) taken to arrive at the nearest water point during Dry season.
	Amount of group credit accessed (KES)	Amount (KES)
	Income diversification	Count of income sources
Social Safety Nets (SSN)	Received cash transfers in the last 12 months	Measured as a dummy [1=if yes; 0 otherwise]
	Received food aid in the last 12 months	Measured as a dummy [1=if yes; 0 otherwise]
	Remittances	Measured as a dummy [1=if yes; 0 otherwise]
	Social security benefits	Measured as a dummy [1=if yes; 0 otherwise]
	Social Assistance	Measured as a dummy [1=if yes; 0 otherwise]
	Member of Water harvesting and Conservation group	Measured as a dummy [1=if yes; 0 otherwise]
Access to Basic Services (ABS)	Has access to safe water sources for domestic consumption	Measured as a dummy [1=if yes; 0 otherwise]
	Average distance in KM to the nearest market where they sell the farm or livestock produce. Calculated as the average distance from home to the nearest market for households by county.	Measured as the distance (KM) taken to arrive at the nearest market center.

Resilience Pillar	Variables description	How the variable is measured
	distance in KM to the nearest water point-Wet seasons	Measured as the distance (KM) taken to arrive at the nearest water point during Wet season.
	distance in KM to the nearest water point-Dry seasons	Measured as the distance (KM) taken to arrive at the nearest water point during Dry season.
	Dependency Ratio: The ratio between the total number of household members below 15 years or above 65 to the number of household members between 15 and 65 years.	Ratio
	Income diversification	Count of income sources
Assets (AST)	Size of land (acres) owned by the household	Size of land (acres)
	Number of poultry (indigenous/Improved Kienyeji)	Number

Annex 6: Variables used in computation of WOmen Economic empowerment index

Variable	Description	How the variables are captured
Women Decision Index (WDI)	**Principal component index – women decision-** Women participation in at least one decision-making in utilization of income from any of the crops and livestock and livestock products. WEE-CSA targeted value chains (beans, onions, green grams, potatoes, vegetables, Galla goat, dairy goat, milk from the dairy goats, poultry, eggs, and honey), responses categorized as (1=husband, 2=spouse, 3=joint (husband and spouse), 4=other male and 5=another female) for	Dummy Composite (Women_ Decision=1 or 0)
	No of years of education of the household head	# of years
Gender Voice Index (GVI)	Women can voice against cultural practices that prevent women from crops production	Measured as a dummy [1=if aware; 0 otherwise
	Women can voice against cultural practices that prevent women from livestock production	Measured as a dummy [1=if aware; 0 otherwise
	Received gender mainstreaming message	Measured as a dummy [1=if aware; 0 otherwise
Awareness to Climate Change and participation in gender policy-making (GCC)	Aware of challenges to climate change	Measured as a dummy [1=if aware; 0 otherwise
	Aware of existence of Climate Change Committee in their locality	Measured as a dummy [1=if aware; 0 otherwise
	Participation in climate change decision making	Measured as a dummy [1=if participated; 0 otherwise
	Aware of any Climate Change Action (CCA) policies developed by the government	Measured as a dummy [1=if aware; 0 otherwise
	Able to demand from the elected leaders to account on how they are discharging their functions in relation to Climate Change Action (CCA) Management (e.g. MCAs, MPs)	Measured as a dummy [1=if able; 0 otherwise
	Able to access government information on the budgets (information on resources available for their community)	Measured as a dummy [1=if able; 0 otherwise
	Participation in the previous year (July 2021 – June 2022) in the national government's planning and budget process (Public Participation)	Measured as a dummy [1=if participated; 0 otherwise
	Aware of Gender policy developed by the National or County government?	Measured as a dummy [1=if aware; 0 otherwise
	Participation in the development of the county gender policy	Measured as a dummy [1=if participated; 0 otherwise

Variable	Description	How the variables are captured
Capacity building (CAP)	Training in leadership and in financial management skills	Measured as a dummy [1=if aware; 0 otherwise
Participation in markets for the selected value chains (COM)	Participation in markets through selling farm produce or livestock or livestock products	Measured as a dummy [1=if aware; 0 otherwise
Credit (individual and group)	If accessed credit as an individual or as a group	Measured as a dummy [1=if aware; 0 otherwise
Land ownership	Land ownership through title deed	Size of land owned with title deed

Annex 7: Attrition tests

	Area	Beans	Potatoes	Poultry	Eggs	Meat	Honey	Poverty	FIES (Food Insecurity Experience S				Resilience	WEI_CC
									Mild	Moderate	Severe	Mod+Sev		
Area	-.209													
	(1)													
County														
2.County	.058			-1.065				.25	.263	.215	.221	.263	.07	.216
	(.602)			(.835)				(.284)	(.292)	(.283)	(.294)	(.292)	(.415)	(.282)
3.County	.165							.622**	.604**	.581**	.584**	.604**	.805**	.588**
	(.753)							(.281)	(.279)	(.277)	(.28)	(.279)	(.345)	(.279)
Gender	.355		-1.596					.235	.244	.246	.25	.244	-.022	.287
	(.53)		(1.276)					(.254)	(.254)	(.253)	(.253)	(.254)	(.394)	(.256)
Age	-1.019	-.832	12.276	-1.775	2.252			-.023	-.025	-.015	-.013	-.025	-.315	.004
	(.836)	(2.004)	(8.727)	(1.501)	(5.529)			(.358)	(.356)	(.356)	(.357)	(.356)	(.452)	(.355)
HH_size	-1.632**	-1.847	-9.347	2.122	7.498	-.353		-.203	-.259	-.235	-.243	-.259	-.015	-.266
	(.691)	(1.669)	(7.414)	(1.746)	(9.356)	(2.854)		(.363)	(.358)	(.358)	(.36)	(.358)	(.513)	(.358)
Beans		-2.466												
		(2.23)												
Potatoes			-3.313											
			(2.276)											
Poultry				-.708										
				(.589)										
Eggs					-.451									
					(.625)									
Meat						.233								
						(.534)								
Honey							1.286							
							(1.974)							
Poverty								.314						
								(.327)						
FIES_Mild									-.122					
									(.25)					
FIES_Moderate										.138				
										(.247)				
FIES_Severe											-.008			
											(.211)			
FIES_Mode+Seve												.122		
												(.25)		
Resilience													-.045	
													(1.087)	
WEI_CC														-.834
														(.752)
_cons	4.545	5.881	-31.505	4.281	-21.817	-1.58	-3.226	-1.575	-1.407	-1.513	-1.481	-1.529	-.902	-1.439
	(3.673)	(9.947)	(23.409)	(5.772)	(35.232)	(6.092)	(4.653)	(1.52)	(1.516)	(1.511)	(1.51)	(1.512)	(1.891)	(1.516)
Observations	300	24	14	58	31	28	3	517	517	517	517	517	379	517
Pseudo R^2	.169	.144	.516	.5	.197	.023	.183	.037	.033	.034	.032	.033	.096	.041

*Standard errors are in parentheses; *** p<.01, ** p<.05, * p<.1*

Annex 8: Results Framework and Indicators

			Baseline (n)	End-line (n)	Baseline 2020	End-line 2024	dif	St Err	t value	p value
FIES	Beneficiaries	FIES Mild	326	326	18%	35%	-0.17	0.03	-5.1	0.000
		FIES Moderate	326	326	17%	23%	-0.07	0.03	-2.15	0.031
		FIES Severe	326	326	66%	42%	0.24	0.04	6.3	0.000
		FIES Moderate + Severe	326	326	83%	65%	0.17	0.03	5.1	0.000
# of Months of Food Gaps	No of Months of Food gaps	No of Months of Food gaps	325	326	5	2	2.68	0.19	14.05	0.000
Household Income	Beneficiaries	Kitui	109	109	109,752	82,807	26,945	12,916	2.1	0.038
		Laikipia	135	134	80,719	149,069	(68,350)	13,532	-5.05	0.000
		West Pokot	82	83	89,134	168,221	(79,087)	18,001	-4.4	0.000
		All	326	326	92,543	131,790	(39,247)	8,641	-4.55	0.000
Poverty	Beneficiaries	Kitui	109	109	15%	4%	0.11	4%	2.85	0.005
		Laikipia	135	134	5%	22%	-0.172	4%	-4.2	0.000
		West Pokot	82	83	1%	2%	-0.012	2%	-0.55	0.570
		All	326	326	7%	11%	-0.037	2%	-1.65	0.105
Resilience	Beneficiaries	Kitui	89	77	0.33	0.27	0.07	0.02	3.55	0.00
		Laikipia	91	88	0.30	0.29	0.01	0.02	0.7	0.47
		West Pokot	58	62	0.39	0.38	0.01	0.02	0.45	0.65
		All	238	227	0.34	0.31	0.03	0.01	2.55	0.01
Women Economic Empowerment Index	Beneficiaries	Kitui	109	109	0.09	0.28	-0.19	0.02	-8.3	0.00
		Laikipia	135	134	0.09	0.12	-0.03	0.01	-2.35	0.02
		West Pokot	82	83	0.20	0.20	-0.01	0.06	-0.1	0.90
		All	326	326	0.12	0.19	-0.08	0.02	-4.3	0.00
Productivity All Counties (Beneficiaries)		Beans	15	25	0.21	0.43	-0.21	0.082	-2.6	0.014
		Onions	20	17	4.72	3.62	1.09	1.39	0.8	0.439
		Fodder	1	1	0.01	0.22	-0.21	.	.	.
		Grams	19	34	0.26	0.39	-0.13	0.099	-1.3	0.209
		Potatoes	6	18	1.70	1.85	-0.16	0.614	-0.25	0.805
		Dairy goat	8	37	3	10	-6.77	2.377	-2.85	0.007
		Vegetables	6	19	3.4	5.8	-2.41	2.958	-0.8	0.424
		Milk	8	15	168	95	72.58	49.524	1.45	0.158
		Doper	6	11	39	15	23.89	6.453	3.7	0.009
		Meat goat	17	40	11	21	-9.26	3.163	-2.95	0.007
		Poultry	88	98	32	232	-200.2	40.196	-5	0.000
		Eggs	24	32	1931	9445	(7,514)	4,956	-1.5	0.140
		Honey	4	22	11	12	-1.62	7.064	-0.25	0.827
Productivity (Beneficiaries)	Indigenous vegetables e.g., Managu (black nightshade), spider flower									
	Tons/Ha	Kitui	3	19	0.6	5.8	-5.24	2.36	-2.20	0.04
		Laikipia		5	1.6	*--		0.88	-0.85	4.06
		West Pokot	*--	*--	*--	*--	*--	*--	*--	*--
		All Counties	6	19	3.4	5.8	-2.41	2.96	-0.80	0.424
	Green grams- – Tons/Ha	Kitui	19	34	0.3	0.4	-0.13	0.10	-1.30	0.209

			Baseline (n)	End-line (n)	Baseline 2020	End-line 2024	dif	St Err	t value	p value
	Irish potatoes- – Tons/Ha	Laikipia	6	18	1.7	1.9	-0.16	0.61	-0.25	0.805
	Bulb onion -– Tons/Ha	West Pokot	20	17	4.7	3.6	1.09	1.39	0.80	0.439
	Poultry (Meat Production)									
	Number of live animals owned during the reference period (Av. #/Year/hh)	Kitui	46	36	26	151	-125.4	16.7	-7.50	0.00
		Laikipia	40	42	40	66	-26.1	19.7	-1.30	0.19
		West Pokot	2	20	18	727	-709.7	145.1	-4.90	0.00
		All Counties	88	98	32	232	-200.2	40.2	-5.00	0.00
	Poultry (Eggs Production)									
	Number of eggs produced during the reference period (Av. #/Year/hh)	Kitui	3	14	723	10,388	(9,665)	6,231	-1.55	0.144
		Laikipia	21	17	2,103	8,694	(6,591)	7,926	-0.85	0.418
		West Pokot	*--	*--	*--	*--	*--	*--	*--	*--
		All Counties	24	32	1,931	9,445	(7,514)	4,956	-1.5	0.14
	Goats (Meat Production – Galla Goats)									
	Number of live animals owned during the reference period (Av. #/Year/hh)	Kitui	15	20	9	23	-14	3.72	-3.90	0.00
		Laikipia	2	3	30	9	21	5.51	3.80	0.06
		West Pokot		17		20		1.49	16.42	22.75
		All Counties	17	40	11	21	-9	3.16	-2.95	0.01
	Goats (Milk Production)									
	Quantity (liter) of milk produced per goat during the reference period (Lts/year)	Kitui			16	68		40.1	-18	153.13
		Laikipia	8	8	168	164	3.604	71.585	0.05	0.961
		West Pokot	*--	*--	*--	*--	*--	*--	*--	*--
		All Counties	8	15	168	95	72.576	49.524	1.45	0.158
	Apiculture (Honey production)									
	(Kgs/Beehive/year)	Kitui		5		6.8		1.9	1.53	12.16
		Laikipia	4	14	10.7	7.6	3.129	6.326	0.5	0.651
		West Pokot	*--	*--	*--	*--	*--	*--	*--	*--
		All Counties	4	22	11	12	-1.621	7.064	-0.25	0.827
Number of farmers utilizing CSA technologies	Beneficiaries	Kitui	109	109	91%	90%	0.01	0.04	0.250	0.820
		Laikipia	135	134	70%	75%	-0.05	0.06	-0.900	0.362
		West Pokot	82	83	43%	48%	-0.06	0.08	-0.700	0.480
		All	326	326	70%	73%	-0.03	0.04	-0.850	0.387
Number of agricultural Practices/technologies (crops and livestock) adopted	Beneficiaries	Kitui	109	109	7	12	-4.825	0.52	-9.25	0.000
		Laikipia	135	134	6	7	-1.367	0.511	-2.7	0.008
		West Pokot	82	83	5	8	-3.086	0.68	-4.55	0.000
		All	326	326	6	9	-2.957	0.346	-8.55	0.000
Area (Ha) under CSA Technologies	Beneficiaries	Kitui	109	109	0.57	0.91	-0.336	0.1	-3.4	0.001
		Laikipia	135	134	0.04	0.02	0.022	0.012	1.95	0.055
		West Pokot	82	83	0.06	0.10	-0.044	0.031	-1.4	0.162
		All	326	326	0.22	0.34	-0.115	0.044	-2.65	0.009
1.1.4: Number of people reached with CSA gender mainstreaming messages	Beneficiaries	Kitui	109	109	13%	72%	-0.587	0.054	-10.85	0.000
		Laikipia	135	134	24%	28%	-0.047	0.053	-0.85	0.387
		West Pokot	82	83	52%	82%	-0.295	0.07	-4.2	0.000
		All	326	326	27%	57%	-0.291	0.037	-7.9	0.000
	Beneficiaries	Kitui	97	96	2%	24%	-0.219	0.046	-4.75	0.000

			Baseline (n)	End-line (n)	Baseline 2020	End-line 2024	dif	St Err	t value	p value
1.2.1. Number of women participating in the development and implementation of CSA		Laikipia	121	119	7%	9%	-0.018	0.036	-0.5	0.615
		West Pokot	70	72	16%	18%	-0.024	0.064	-0.35	0.712
		All	288	287	8%	16%	-0.088	0.027	-3.25	0.001
1.2.2. Number of women with leadership skills to participate in CSA and CCA decision-making	Beneficiaries	Kitui	68	91	3%	36%	-0.333	0.055	-6.1	0.000
		Laikipia	47	63	17%	21%	-0.036	0.075	-0.5	0.634
		West Pokot	47	65	19%	25%	-0.055	0.079	-0.7	0.491
		All	162	219	12%	28%	-0.166	0.04	-4.2	0.000
1.2.3. Number of women investing and participating in CSA	Beneficiaries	Kitui	97	96	2%	20%	-0.177	0.055	-3.25	0.002
		Laikipia	121	119	8%	6%	0.024	0.033	0.7	0.474
		West Pokot	70	72	37%	45%	-0.073	0.142	-0.5	0.607
		All	288	287	13%	20%	-0.07	0.044	-1.6	0.107
2.1.2a. Number of women engaged in agro-enterprises (at least marketing something from agro-enterprise)	Beneficiaries	Kitui	97	96	69%	84%	-0.153	0.06	-2.55	0.012
		Laikipia	121	119	46%	52%	-0.058	0.065	-0.9	0.370
		West Pokot	70	72	7%	35%	-0.276	0.065	-4.3	0.000
		All	288	287	45%	59%	-0.141	0.042	-3.4	0.001
2.1.2b.: Number of farmers utilizing CSA technologies	Beneficiaries	Kitui	109	109	91%	90%	0.009	0.04	0.25	0.82
		Laikipia	135	134	70%	75%	-0.05	0.055	-0.9	0.362
		West Pokot	82	83	43%	48%	-0.055	0.078	-0.7	0.48
		All	326	326	70%	73%	-0.03	0.036	-0.85	0.387
2.1.3. Number of agricultural Practices/technologies (crops and livestock) adopted	Beneficiaries	Kitui	109	109	7	12	-4.825	0.52	-9.25	0
		Laikipia	135	134	6	7	-1.367	0.511	-2.7	0.008
		West Pokot	82	83	5	8	-3.086	0.68	-4.55	0
		All	326	326	6	9	-2.957	0.346	-8.55	0
2.2.2 Number of improved CSA practices (12)	Beneficiaries	Kitui	109	109	3	4	-1.046	0.26	-4.05	0
		Laikipia	135	134	2	2	0.061	0.196	0.3	0.755
		West Pokot	82	83	1	1	-0.315	0.218	-1.45	0.15
		All	326	326	2	2	-0.402	0.145	-2.75	0.006
2.2.3. Number of women benefitting from water harvesting structures	Beneficiaries	Kitui	97	96	64%	93%	-0.288	0.056	-5.150	0.000
		Laikipia	121	119	77%	90%	-0.131	0.048	-2.750	0.007
		West Pokot	70	72	20%	65%	-0.453	0.183	-2.500	0.015
		All	288	287	59%	85%	-0.26	0.055	-4.700	0.000
Output Indicator 2.3.1: Number of women trained on CSA financial services	Beneficiaries	Kitui	97	96	70%	81%	-0.112	0.061	-1.800	0.072
		Laikipia	121	119	39%	45%	-0.057	0.064	-0.900	0.373
		West Pokot	70	72	73%	74%	-0.007	0.075	-0.100	0.920
		All	288	287	58%	64%	-0.065	0.041	-1.600	0.112
2.3.2. Number of women groups aggregating produce along value chain	Beneficiaries	Kitui	97	96	35%	85%	-0.504	0.060	-8.300	0.000
		Laikipia	121	119	41%	30%	0.111	0.061	1.800	0.074
		West Pokot	70	72	27%	58%	-0.312	0.080	-3.950	0.000
		All	288	287	36%	56%	-0.2	0.041	-4.900	0.000
Number of women investing and participating in CSA		aware			47					
		Investing			35					

		Baseline (n)	End-line (n)	Baseline 2020	End-line 2024	dif	St Err	t value	p value
Agricultural production of beneficiaries (1 bags/acre - > 9 bags/acre)4				Crop: 2.4 tons/ha					
Number of extension agents (30) with understanding of Gender and CSA skills				13					
Number of women (1,200) engaged in agro-enterprises				2355					
Number of farmers (2,400: 2000 F, 400 M) utilizing CSA technologies	Female Male			47 100					
Number of agricultural technologies adopted				46					
Area of farmland under CSA practices (768ha)				91	113				
Number of improved CSA practices				6					
Number of women (200) benefitting of water harvesting structures				5					
Number of women (1000) trained on CSA financial services				12					
Number of women groups (9) aggregating produce along value chain	Kitui Laikipia West Pokot			3 2 5					
Group value chain specific production for last 12 months (KGs)				TBC					
Group sales for last 12 months (KES/USD)				9713					
Dues collected for last 12 months (KES) - NB: Dues is a periodic mandatory contribution by members to the group.									
Group savings (USD)				642					
Credit/loans issued to members (USD)				520					
Value of Assets owned by group				TBC					
Group value (USD) of re-investment				0					
Number of trees planted and are growing.				90					
Percentage of groups involved in selected value chains				16					
Number of group members (males and females) accessing loans				Males: 0 Females: 4					
Number of county government that implement a gender responsive system (laws polices) on CSA policies and strategies				0					
Number of County government staff who participate in specialized workshop (alignment of county development plans with national CSA/CCA policies)	Kitui Laikipia West Pokot			5 40 3					
Number of County government staff who participate in specialized workshop (gender-responsive CSA policies)	Kitui Laikipia West Pokot			5 4 3					
Number of people (6,000) reached with CSA gender mainstreaming messages	Female Male			40 100					
Number of guidelines developed (1)									

	Baseline (n)	End-line (n)	Baseline 2020	End-line 2024	dif	St Err	t value	p value
Number of women groups participating in the development and implementation of CSA			TBD[3]					
Number of women with leadership skills to participate in CSA and CCA decision-making			67					

Annex 9: DiD STATA SCRIPT


```
clear
clear mata
set memory 1g,
macro drop _all
constraint drop _all
set more off
use " DID.dta", clear

sort Member_name Time
gen ln_HH_size=ln(q_212+1)
gen ln_Member_Age=ln(Member_Age+1)
rename Tot_CSA_Area Area
rename Productivity_Veges Vegetables
rename Productivity_Beans Beans
rename Productivity_Grams Greengrams
rename Productivity_Potatoes Potatoes
rename Productivity_Onions Onions
rename Productivity_Poultry Poultry
rename Productivity_Eggs Eggs
rename Productivity_Meat Meat
rename Productivity_Honey Honey
rename Productivity_Milk Milk
rename HH_poverty Poverty

tab County, gen(County_ )
rename County_1 County_Kitui
rename County_2 County_Laikipia
rename County_3 County WestPokot
replace County="1" if County=="Kitui"
replace County="2" if County=="Laikipia"
replace County="3" if County=="WestPokot"
destring County, replace
*replace Sale_Dorper="." if Sale_Dorper=="other"
destring Sale_Dorper, replace
gen ln_Foodgaps=ln(Foodgaps_2023+1)
qui foreach var of varlist Sale_* {
recode `var' (.=0)
gen ln_`var'=ln(`var'+1)
}
```

```
gen ln_Age_member=ln(Member_Age+1)
gen ln_Area=ln(Area+1)

global Productivity "HH_inco Vegetables Beans Greengrams Potatoes Onions Poultry Eggs Meat Honey Milk"
foreach var of global Productivity {
gen ln_`var'=ln(`var'+1)
}
/*********************************************************************
Testing attrition
*********************************************************************/
*ln_Vegetables
*ln_Greengrams
*ln_Onions
*ln_Milk

/*Paralel Trends holds for
Beans
Poultry
Bulb onions
Green grams
Vegetables
Galla goat (meat goat
Eggs
Honey
Beans     PotatoesPoultry   Eggs      Meat      Honey
*/
set more off
global px "ln_Area ln_Vegetables ln_Beans ln_Greengrams ln_Potatoes ln_Onions ln_Poultry ln_Eggs ln_Meat
ln_Honey ln_Milk"
foreach var of global px {
recode `var' (.=0)
sort Member_name Time
by Member_name: gen b_`var'=`var'[1]
*recode `var' b_`var' (0=.)
}

set more off
foreach var of varlist Poverty  FIES_Mild FIES_Moderate FIES_Severe FIES_Mode_Seve Resil_index WEI_CC  {
sort Member_name Time
by Member_name: gen b_`var'=`var'[1]
}

asdoc probit Attrition b_ln_Area i.County Gender ln_Age_member ln_HH_size if Time==1, nest replace
save(Attrition_test) stars cnames(Area)
asdoc probit Attrition b_ln_Beans i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars
cnames(Beans)
```

```
asdoc probit Attrition b_ln_Potatoes  i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(Potatoes)
asdoc probit Attrition b_ln_Poultry i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(Poultry)
asdoc probit Attrition b_ln_Eggs i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(Eggs)
asdoc probit Attrition b_ln_Meat  i.County   ln_HH_size if Time==1, nest append stars cnames(Meat)
asdoc probit Attrition b_ln_Honey i.County ln_HH_size if Time==1, nest append stars cnames(Honey)
asdoc probit Attrition b_Poverty i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(Poverty)
asdoc probit Attrition b_FIES_Mild i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(FIES_Mild)
asdoc probit Attrition b_FIES_Moderate i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(FIES_Moderate)
asdoc probit Attrition b_FIES_Severe i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(FIES_Severe)
asdoc probit Attrition b_FIES_Mode_Seve i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(FIES_Mode+Seve)
asdoc probit Attrition b_Resil_index i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(Resilience)
asdoc probit Attrition b_WEI_CC i.County Gender ln_Age_member ln_HH_size if Time==1, nest append stars cnames(WEI_CC)


drop if Attrition==1
/*****************************************************************/

set more off
gen P_end=Intervention==1 & Time==1
egen P_2024=max(P_end), by(Member_name)
gen DID= P_2024*Time
gen Treated=P_2024
gen DiD=DID
diff ln_Area, t(P_2024) p(Time)
diff ln_Area, t(Treated) p(Time)
reg ln_Area DID Treated Time
*xtreg ln_Area DID Treated Time, fe i(Member_name)

foreach var of varlist Area Beans Onions Greengrams Potatoes Vegetables Milk Meat Poultry Eggs Honey {
diff ln_`var', t(Treated) p(Time)
outreg2 using table_diff, ctitle(`r(depvar)') addstat(Mean control t(0), r(mean_c0), ///
Mean treated t(0), r(mean_t0), Diff t(0), r(diff0), Mean control t(1), r(mean_c1), ///
Mean treated t(1), r(mean_t1), Diff t(1), r(diff1)) label excel keep(_diff) nocons
}
```

```
foreach var of varlist Poverty FIES_Mild FIES_Moderate FIES_Severe FIES_Mode_Seve ln_HH_inco  Resil_index
WEI_CC  {
diff `var', t(Treated) p(Time)
outreg2 using table_diff, ctitle(`r(depvar)') addstat(Mean control t(0), r(mean_c0), ///
Mean treated t(0), r(mean_t0), Diff t(0), r(diff0), Mean control t(1), r(mean_c1), ///
Mean treated t(1), r(mean_t1), Diff t(1), r(diff1)) label excel keep(_diff) nocons
}

set more off
foreach var of varlist Area Beans Onions Greengrams Potatoes Vegetables Milk Meat Poultry Eggs Honey {
diff ln_`var', t(Treated) p(Time) cov(County_WestPokot ln_HH_size ln_Member_Age Disabled) report
outreg2 using table_diff, ctitle(`r(depvar)') addstat(Mean control t(0), r(mean_c0), ///
Mean treated t(0), r(mean_t0), Diff t(0), r(diff0), Mean control t(1), r(mean_c1), ///
Mean treated t(1), r(mean_t1), Diff t(1), r(diff1)) label excel keep(_diff) nocons
}

set more off
foreach var of varlist Poverty FIES_Mild FIES_Moderate FIES_Severe FIES_Mode_Seve Foodgaps_2023 ln_HH_inco
Resil_index WEI_CC  {
diff `var', t(Treated) p(Time) cov(County_* ln_HH_size ln_Member_Age Disabled) report
outreg2 using table_diff, ctitle(`r(depvar)') addstat(Mean control t(0), r(mean_c0), ///
Mean treated t(0), r(mean_t0), Diff t(0), r(diff0), Mean control t(1), r(mean_c1), ///
Mean treated t(1), r(mean_t1), Diff t(1), r(diff1)) label excel keep(_diff) nocons
}
```