Enhancing Rural Women Farmers’ Resilience to Climate Change-Induced Impacts through Financial Inclusion in Nigeria

A MIXED-METHODS STUDY OF RURAL WOMEN FARMERS ACROSS BENUE, EBONYI & OGUN STATES

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WHY THIS STUDY

Rural women farmers sit at the crossroads of two crises

1

Climate volatility

Erratic rainfall, flooding, heat and drought are directly reducing yields, income and food security across all three states.

2

Persistent gender gaps

Women carry a disproportionate share of household provisioning and farm labour, yet have less independent access to formal finance.

3

Uneven financial inclusion

Informal savings groups dominate; formal accounts, loans and especially insurance remain thin especially where climate risk is highest.

“

Climate change has reduced my income, other years I experienced 50–60% of income, but last year it was just 10%.

FGD 7 — Ndieze, Izzi LGA, Ebonyi State

Source: Thematic Coding Framework (FGD/KII), 2026.

THE PROBLEM

Climate shocks are eroding livelihoods faster than women farmers can currently recover from them

Falling yields	Farmers report harvests dropping from ~10 bags to as few as 4, driven by delayed rains, drought and pest pressure.
Rising debt & food insecurity	Failed harvests leave women farmers in debt for borrowed inputs, and households cut meals to cope.
Thin financial safety nets	High interest rates, collateral demands, distance to institutions and, in places, spousal authorisation requirements keep women locked out of formal finance.
Near-absent climate insurance	Formal agricultural insurance uptake is almost universally absent — the one instrument built to absorb shocks directly.

> *You may plant and expect a harvest of 10 bags and end up with a harvest of 4 bags.*
>
> **FGD 5 — Tarka, Benue State**

Source: Thematic Coding Framework — Themes 1 & 2 (Climate & Livelihood Impacts); PSM Methodology and Results Report.

STUDY OBJECTIVES

Three questions this evidence base was built to answer

01

Which service combinations work?

Identify which combinations of financial-inclusion services (accounts, savings, loans, insurance, mobile money, ATM/debit, esusu) are most strongly associated with climate resilience.

02

Do these gains reach welfare?

Assess how financial inclusion and climate resilience — together — relate to agricultural productivity, household income and food security.

03

Is the current programme working?

Rigorously test whether the existing financial-inclusion / cooperative / infrastructure programme is actually improving climate resilience, using causal-inference methods (PSM).

Source: PSM Methodology and Results Report, Section 1.

HOW WE KNOW THIS

A mixed-methods design: numbers that measure impact, voices that explain why

QUANTITATIVE

Propensity Score Matching (PSM)

- 360 women farmers surveyed: 120 each in Benue, Ebonyi and Ogun (180 programme beneficiaries vs. 180 non-beneficiaries).
- PSM statistically matches beneficiaries to similar non-beneficiaries on baseline traits (age, education, farm size, household size, state) — so we compare like with like, not just ‘who joined’ vs. ‘who didn’t’.
- Results are triangulated across three separate estimation methods for robustness, and checked against the strictest statistical correction (Bonferroni) so only the sturdiest findings are called ‘robust’.

QUALITATIVE

Thematic coding of field voices

- 9 Focus Group Discussions (3 per state) with beneficiaries and non-beneficiaries.
- 13 Key Informant Interviews — women leaders, extension agents, a State Agricultural Officer, a mobile-money agent, a POS operator and a lead farmer.
- Eight themes coded deductively and inductively (climate impacts, gender, financial access, barriers, coping strategies, programme effectiveness, recommendations) used throughout this deck to explain the ‘why’ behind the numbers.

Source: PSM Methodology and Results Report, Section 2; Thematic Coding Framework, Section 1.

Who were studied: 360 women farmers across three states

42 yrs
Average age of respondents

7–8
People per household

~1.4–1.7 ha
Average farm size

~8 yrs
Average years of schooling

Beneficiary (B) vs. non-beneficiary (N) baseline characteristics, by state

Indicator	Benue (N)	Benue (B)	Ebonyi (N)	Ebonyi (B)	Ogun (N)	Ogun (B)
Age (years)	36.25	40.97	37.52	41.50	49.87	47.85
Household size	9	8	7	8	6	6
Education (years)	7.97	8.53	8.13	9.27	8.57	6.10
Farm size (ha)	1.19	2.07	1.17	1.64	1.74	1.40
Farming experience (yrs)	17.02	17.05	13.17	17.53	19.82	18.62

N = Non-beneficiary, B = Beneficiary. Source: Summary Statistics; PSM Methodology and Results Report, Section 3.1.

Beneficiaries' vs Non-Beneficiaries

Food-Secure Households

6.7% ↑ 27.2%

N-bene | Beneficiaries

4.1×

Climate Resilience (CRI)

44.8 ↑ 54.7

N-bene | Beneficiaries

+9.9pts

Financial Inclusion Index (FII)

39.6 ↑ 44.4

N-bene | Beneficiaries

+4.8 pts

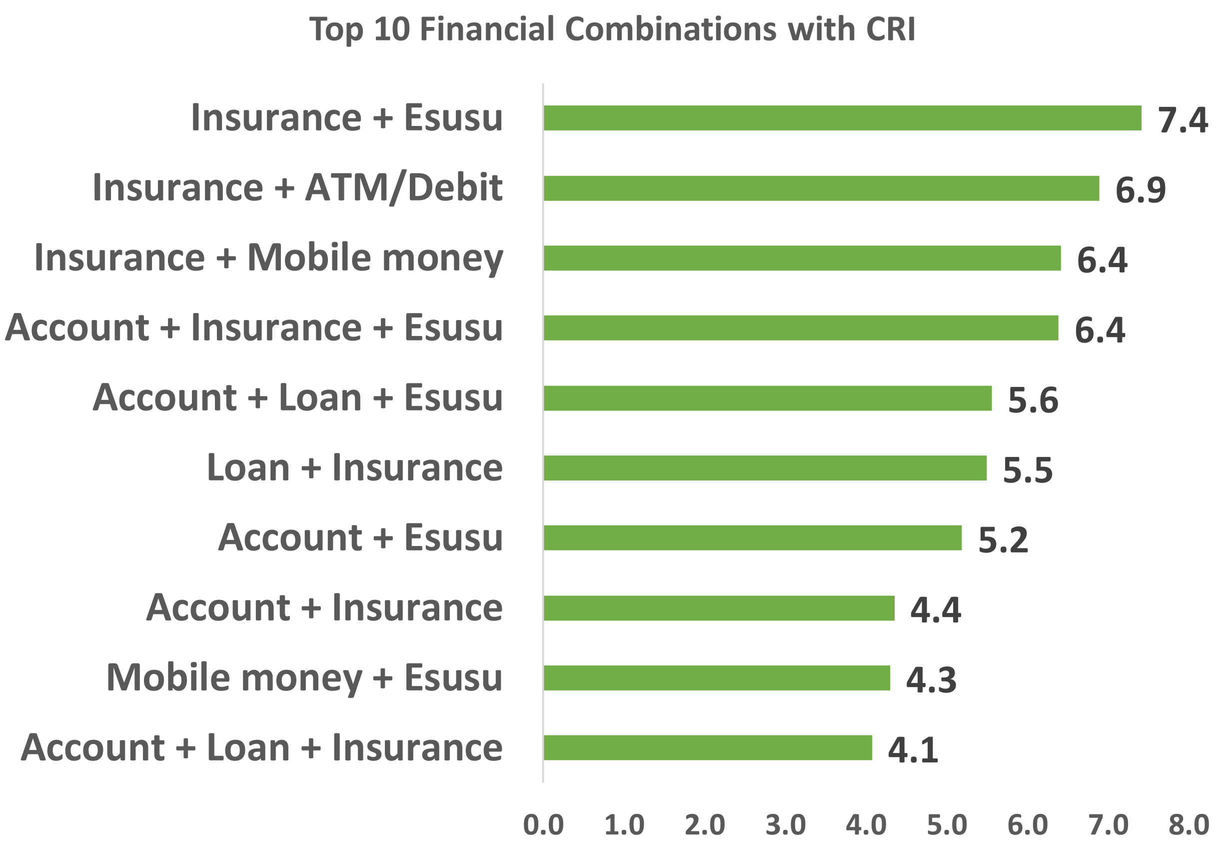
Beneficiary households are consistently more resilient, more food-secure, and modestly more financially included than non-beneficiaries. The story is strongest in Ebonyi and Benue, and much weaker in Ogun State

FII –3 Dimensions (Access, Availability, and Usage)

CRI: 6 Dimensions (Adaptive capacity, Asset, Social safety nets, Basic services access, Income and food access & Stability)

FINDING 1 · OBJECTIVE 1

Insurance- and account-based service bundles do the most for climate resilience



All are significant at $p<0.0001$

Of 27 financial-service combinations tested against climate resilience, 19 are statistically significant while 15 remain significant even after the strictest correction for multiple testing.
Services built around a formal account and around insurance are consistently the strongest predictors.

> *The Esusu that we have collected helps us to re-cultivate the farm.*
>
> **FGD 8 — Noyo, Ikwo LGA, Ebonyi State**

Source: PSM Methodology and Results Report, Section 3.3; Thematic Coding Framework, Theme 6.1.

FINDING 2 · OBJECTIVE 2

Financial inclusion and climate resilience reinforce each other and beneficiaries feel the difference

r = 0.82

Income change and productivity change move strongly together

+26 pp

More likely to perceive a productivity increase vs. matched non-beneficiaries

+15.8 pp

More likely to perceive an income increase vs. matched non-beneficiaries

511.7

FII × CRI synergy effect on welfare ($p=0.0005$), strongest joint signal

What the numbers say, in plain terms

- On their own, the Financial Inclusion Index and Climate Resilience Index each nudge productivity, income and food security but neither is decisive by itself.
- Where financial inclusion AND climate resilience are both high together, welfare outcomes move furthest the two work as a package, not as substitutes.
- Beneficiaries' own perception of ‘things improving’ lines up with the objective productivity and income data. Self-reports and hard numbers tell the same story.

“

When we are unable to plant, we diversify into rearing livestock, or adding value to some of our produce to generate more income.

FGD 8 — Noyo, Ikwo LGA, Ebonyi State

Source: PSM Methodology and Results Report, Sections 3.4.1, 3.4.4, 3.4.5; Thematic Coding Framework, Theme 6.5.

FINDING 3 · OBJECTIVE 3 — THE HEADLINE RESULT

The programme is delivering a real, statistically credible improvement in climate resilience

+8.9 pts

Climate Resilience Index

$p < 0.0001$ — consistent across all 3 estimation methods

+18 pp

Likelihood of being food secure

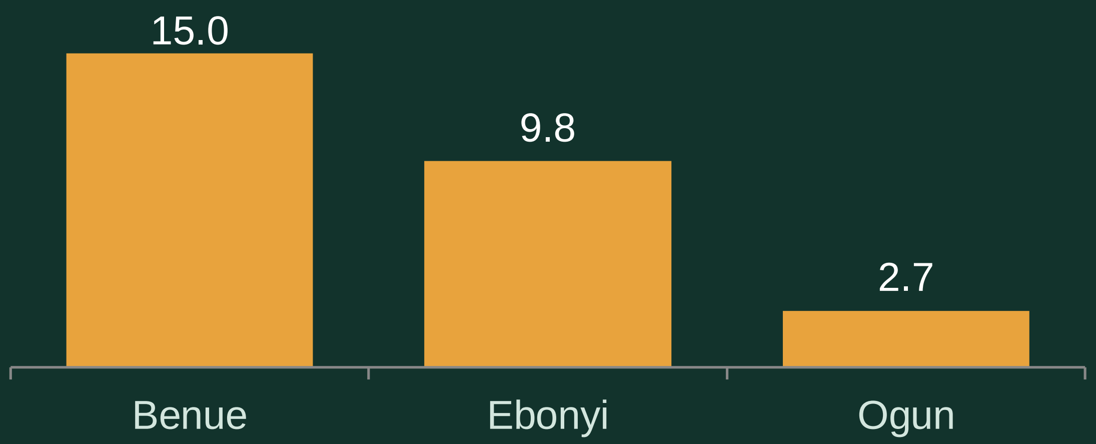
$p < 0.0001$ — the clearest welfare gain

+3.0 pts

Financial Inclusion Index itself

$p = 0.28$ — not statistically decisive on its own

Effect on climate resilience by state (matched-pair ATT)



> *VCDP! They really helped us a lot! — they don't take money from us; they give it to us for free.*
>
> **FGD 1 — Odogbolu, Ogun State**

Source: PSM Methodology and Results Report, Sections 3.5 & 3.6; Thematic Coding Framework, Theme 7.1.

VOICES FROM THE FIELD

Why financial inclusion still doesn't reach every woman farmer

“

The bank interest is usually too high.

FGD 1 — Odogbolu, Ogun State

“

They will say ‘bring a NEPA bill’, ‘bring an ID card’ , that becomes a problem for people who are not literate.

FGD 3 — Owode, Ogun State

“

My husband will say, ‘No, I don’t want you to go and have that loan’ — being a wife, you must be submissive to your husband.

FGD 7 — Ndieze, Izzi LGA, Ebonyi State

“

High interest rate — no collateral to present — distance from the bank.

KII 8 — Mobile Money Agent (POS), Ebonyi State

Barriers cited across all three states: high interest rates · collateral & documentation · distance/transport cost · distrust of group funds · spousal authorisation · low literacy

Source: Thematic Coding Framework, Theme 5 (Barriers to Financial Access).

What's already working — and where the gaps remain

“

VCDP is highly effective. We have access to agricultural input, and as women the cooperative helps us to save money.

KII 3 — Women Leader, Obagaji, Benue State

“

Savings groups are effective because they give loans to their members at low interest rates during their farming periods.

KII 5 — State Agricultural Officer, Ebonyi State

“

No program or organization has supported us.

FGD 9 — Uburu Amachi, Ebonyi State (Non-beneficiaires

“

Not very effective, due to loan design for agricultural sector: high interest rate, short tenure/repayment window, and inadequate grace period.

KII 12 — Lead Farmer, Odogbolu, Ogun State

Source: Thematic Coding Framework, Theme 7 (Effectiveness of Existing Initiatives).

Five implications for programme design and targeting

1	Design around insurance + account bundles	The strongest, most robust resilience gains come from insurance-centred and account-centred service combinations, not from expanding financial inclusion generically.
2	Don't rely on the Financial Inclusion Index alone	The programme's resilience effect does not run mainly through the formal FII, headline financial-inclusion targets are not, by themselves, a resilience strategy.
3	Tailor intensity by state	Benue and Ebonyi show strong, significant resilience gains; Ogun's effect is smaller and less certain — suggesting state-specific delivery or dosage adjustments are needed.
4	Address the access barriers directly	Interest rates, documentation, distance and spousal authorisation are named consistently. Removing these is likely to unlock existing services, not just add new ones.
5	Rebuild trust in insurance	Near-universal non-uptake and specific denied-claim stories mean insurance products need active trust-building alongside distribution.

Source: PSM Methodology and Results Report, Sections 3.6, 4 & 5; Thematic Coding Framework, Themes 5 & 7.

RECOMMENDATIONS

What women farmers and frontline experts are asking for

1

Affordable, tailored credit

Lower interest rates and loan terms designed around planting/harvest cycles.

2

Irrigation & water infrastructure

Boreholes, pumps and dams to buffer against drought and erratic rainfall.

3

Market access & transport support

Reduce haulage costs and strengthen direct market linkages.

4

Processing & value-addition equipment

Grinding mills, threshers and similar tools to diversify income.

5

Climate information & training

Localised forecasts and structured training on adaptive practice.

6

Direct-to-farmer targeting

Reach women farmers directly rather than through intermediaries.

7

Climate-smart insurance products

Insurance designed around actual climate risk, with visible, reliable payouts.

8

Bundle account + insurance + esusu

Prioritise the specific combinations shown to move resilience most.

Source: Thematic Coding Framework, Theme 8 (Recommendations & Future Opportunities).

Thank you

Financial Inclusion, Climate Resilience and Welfare Outcomes Among Rural Women Farmers in Benue, Ebonyi and Ogun States, Nigeria