# 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*


**Sarah Edore Edewor**

EFInA Research Fellow – Enhancing Financial Innovation Advancement (EFInA),


## Introduction

- Climate change affects every Nigerian farmer with heat, erratic rainfall and drought but women farmers are usually disproportionately disadvantaged in accessing land, credit and financial services (World Bank, 2023).
- Gender gaps in financial inclusion - in account ownership, digital payments, savings and credit constrain women's capacity to invest in adaptation and recover from shocks.
- The Nigeria's Value Chain Development Programme (VCDP) through cooperative membership, agricultural inputs, trainings and financial-inclusion services aims to help smallholders adapt and enhance their resilience but it is unclear which financial-service combinations actually build this resilience
- This study asks: which financial-inclusion combinations strengthen rural women farmers' climate resilience, how does that translate into livelihood and welfare outcomes, and is the VCDP programme actually working?

*Fig 1: Water infrastructure and a beneficiary farmer, VCDP communities, Ebonyi State*

## Method

- Mixed-methods study of 360 rural women farmers (180 VCDP beneficiaries &180 non-beneficiaries) across Benue, Ebonyi and Ogun States, all agrarian, VCDP-programme states.
- Two composite indices built for every respondent: Financial Inclusion Index (FII): 3 Dimensions ( Access, Availability, and Usage) and
- Climate Resilience Index (CRI): Adaptive capacity, Asset, Social safety nets, Basic services access, Income and food access & Stability
- OLS, binary logistic & multinomial logit regression on 27 financial-service combinations; Propensity Score Matching (3 independent methods: paired Nearest neighbour (NN, NN with replacement, IPTW) for Average Treatment Effect on the Treated (ATT).
- Qualitative triangulation: thematic coding of 9 focus-group discussions and 12 key-informant interviews across the 3 states.

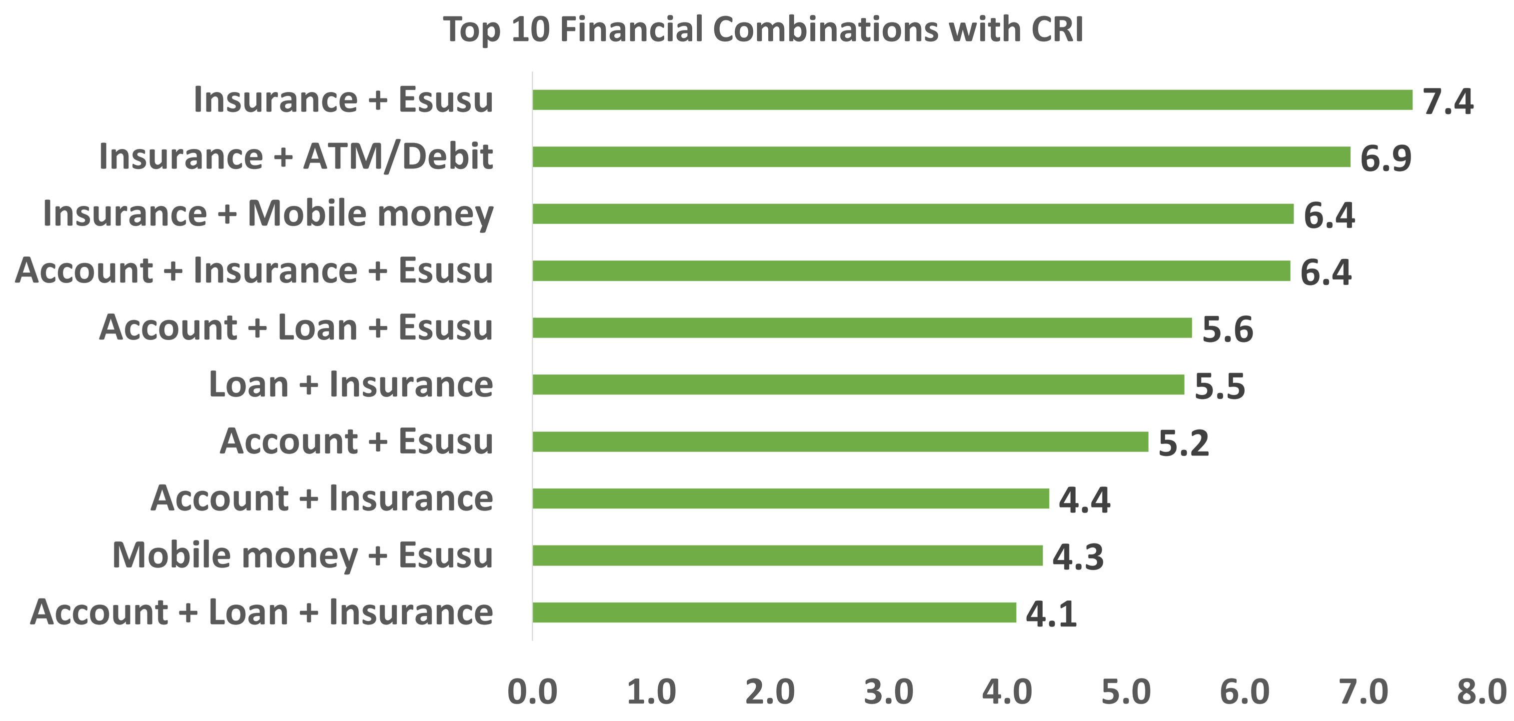
## Result

**Table 1: Financial Inclusion, Climate Resilience ,Food Security & TFP by State**

| State | Group | FII (%) | CRI (%) | Food-Secure (%) | Total Factor Productivity (TFP) |
|---|---|---|---|---|---|
| Benue | Non-beneficiary | 35.8 | 48.8 | 8.3 | 3.794 |
| Benue | Beneficiary | 37.5 | 59.4 | 36.7 | 5.902 |
| Ebonyi | Non-beneficiary | 34.7 | 43.7 | 6.7 | 2.954 |
| Ebonyi | Beneficiary | 44.2 | 54.8 | 41.7 | 3.794 |
| Ogun | Non-beneficiary | 48.3 | 41.7 | 5.0 | 3.204 |
| Ogun | Beneficiary | 51.4 | 49.9 | 3.3 | 3.551 |

- Beneficiary households are consistently more food-secure, more resilient and modestly more financially included than non-beneficiaries.
- The gap is largest in Ebonyi and Benue (food security roughly 4–5× higher among beneficiaries) and much narrower in Ogun State, which already had the highest FII.
- CRI moves with beneficiary status far more consistently than FII does across all three states — the single most consistent, statistically robust outcome in every model.

**Fig 2: Top Financial-Service Combinations Driving Climate Resilience (CRI)**




*CRI regressed on each financial-service combination + propensity score + state fixed effects (all p<0.05, N=360). Top 8 of 27 combinations tested.*

- Combinations anchored on a formal ACCOUNT or INSURANCE are consistently the strongest predictors of resilience; pairing with Esusu, debit cards or mobile money adds further gains.
- Savings-only combinations show weak, non-significant effects — informal savings alone is not enough to build resilience.
- Income and productivity move together for 89% of respondents (r = 0.82, p<0.001); for these farm households, the harvest largely is the income.
- 34% of those with increased income cited "improved practices/inputs" as the reason — the top reason, ahead of price or market factors.

**Table 2: Programme Effect (ATT) on Key Outcomes, Cross-Validated Across 3 PSM Methods**

| Outcome | ATT (range) | Significance |
|---|---|---|
| Climate Resilience Index | +8.9 to +9.5 pts | p<0.001, all 3 methods |
| Food Secure | +0.17 to +0.18 pp | p<0.001, all 3 methods |
| Financial Inclusion Index | −1.0 to +4.0 pts | not significant |
| Agric. Productivity (TFP) | −0.4 to +0.6 | not significant |
| Household Income (₦) | −541K to −607K | not significant |

*Key: the programme's clearest, best-evidenced effects run through Climate Resilience and Food Security — not through the formal Financial Inclusion Index itself.*

## Conclusion

- Financial inclusion builds climate resilience mainly when BUNDLED (account, insurance and esusu-anchored combinations) — not through single-product access.
- Climate resilience (CRI), not the formal FII, is the primary channel to welfare: it robustly predicts food security, pointing to non-financial programme components (inputs, training, infrastructure) as key drivers.
- Matched-comparison (PSM) analysis confirms the VCDP programme is genuinely, causally raising resilience and food security, though unevenly, strongest in Benue and Ebonyi and weakest in Ogun State.

**Policy priority:**

- incentivise bundled products, redesign agricultural insurance, treat irrigation/water access as financial-inclusion-adjacent, and target support directly to women.

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