



Australia Awards



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RESEARCH QUESTIONS

- Q1. How do rice farmers perceive climate change impacts, and how do these perceptions vary by gender and education level?
- Q2.How severely have climate-induced hydrological extremes (droughts, floods) compromised smallholder socio-economic stability and food security?
- Q3. What adaptation strategies and Climate-Smart Agriculture (CSA) technologies are rural households currently deploying?
- Q4. What socio-economic, institutional, and cognitive factors act as the primary drivers or barriers to formal CSA adoption?

RESEARCH METHODOLOGY

- Research Design: Mixed-methods framework utilising Comparative Intra-household Analysis pioneered by McKinley et al..
- Sampling Strategy: Multi-stage stratified random sampling targeting flood- and drought-prone villages (Kompong Preah and Kompong Prieng) near the Tonle Sap lake.
- Spousal-Pair Interview: Sample size of 200 individual respondents comprising 100 distinct husband-wife pairs.
- Bias Mitigation: Simultaneous, physically separated interview streams to mitigate social desirability bias and cross-spouse interference.
- Econometric Modeling of CSA Adaptation (The Probit Model)

$$P(Y_i = X_i) = \varphi(\beta_0 + \beta_1 Educ_i + \beta_2 GenRole_i + \beta_3 Exp_i + \beta_4 Ext_i + \beta_5 Fin_i) + \varepsilon_i$$

RESEARCH TITLE:
Education and Gender-Based Perceptions and Adaptations to Climate Change: Insights from Rice Farmers in Battambang Province

SIGNIFICANCE OF STUDY

This study bridges empirical econometric modeling with national policy by demonstrating that climate resilience in Cambodia's rice sector depends on closing the gender-asset gap and protecting rural human capital.

Intra-Household Perceptions on Climate Hazards

As shown below, while husbands and wives exhibit substantial agreement on high-visibility climate hazards like increased heat and flooding, a significant perceptual disconnect occurs regarding drought (k = 0.42), which is recognised by 82% of wives compared to only 68% of husbands.

Variable	Husband (%)	Wife (%)	Kappa (k)
Increased Heat	89%	91%	0.74
Erratic Rain	84%	85%	0.68
Flooding	76%	72%	0.61
Drought	68%	82%	0.42

Prevalence of Education-Related Coping Strategies

As shown below, households resort to severe erosion of human capital and well-being to cope with climate shocks, with 18% permanently withdrawing children from school (ranked as critical severity) and 24% increasing child labor on farms.

Strategy	% of Households(N=100)	Severity Index
Withdraw children from school	18%	Critical
Increase child labor on farm	24%	High
Borrow from private lenders for fees	32%	Moderate
Reduce food consumption/quality	41%	High

The Probit model demonstrates that formal education, extension access, and credit availability are highly significant positive drivers of CSA adoption, whereas being a female decision-maker significantly reduces the likelihood of adoption (p < 0.05), highlighting prominent structural gender barriers.

Summary of Probit Model Results

Variable	Coeff.	Std. Error	P-Value
Education (Years)	0.124	0.041	0.002***
Gender (Female)	-0.082	0.038	0.045**
Extension Access	0.412	0.088	0.000***
Access to Credit	0.284	0.091	0.005***
Farm Size (Hectares)	0.015	0.012	0.112
Constant	-1.045	0.215	0

RESEARCH KEY FINDINGS

- The Schooling Deficit:** Men average **7.1 years** of formal schooling; women average **5.3 years**. This 1.8-year human capital deficit limits independent processing of technical training.
- The Labor-Agency Paradox:** Women supply up to 48% of physical farm labor but hold only 24% of final decision-making power over major financial farm inputs.
- Drought Disparity:** 82% of wives identify drought as a critical threat compared to only 68% of husbands. Women detect micro-climatic groundwater depletion early due to daily domestic water and livestock management.
- Formal Education:** Each additional year of schooling yields a **+5.2%** probability increase in adopting Stress-Tolerant Rice Varieties (STRVs).
- Female Headship:** Being female drops independent adoption probability by **-3.1%** due to structural asset and credit barriers, despite higher risk sensitivity.
- Institutional Accelerators** : Agricultural extension access increases adoption by **+18.4%**; formal micro-finance liquidity increases it by **+12.1%**.

KEY RECOMMENDATIONS

- Deploy conditional **"Climate-Stay-in-School"** grants triggered by regional weather indexes.
- Integrate specialised **"Green TVET" modules** tracking water-management & crop techniques.
- Link **ARDB climate loans** directly to joint land titling and female asset management.
- Establish village water boards mandating **50% female representation** as community water leads.

