Integrating Climate Change Resilience into Housing Design and Homeownership Schemes for Low-Income Households in Indonesia

INTERNATIONAL COLLABORATIVE RESEARCH GRANT

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Introduction

Climate change is increasing housing vulnerability in Indonesia, particularly among low-income households exposed to recurrent flooding and hydrometeorological hazards. While national housing policies prioritize affordability and homeownership, limited attention has been paid to how socioeconomic conditions, environmental risks, and housing choices collectively affect resilience outcomes.

This study investigates how housing quality, homeownership, socioeconomic capacity, and climate hazard exposure interact to influence housing resilience across West Java.

This current research is the initial part of the broader research plan of Integrating Climate Change Resilience into Housing Design and Homeownership Schemes for Low-Income Households in Indonesia that is envisioned to encompass more extensive disaster-prone/Disaster-affected study area including Sumatera (Aceh) and Jakarta.

Research Methodology

Housing resilience extends beyond affordability and physical dwelling quality, encompassing broader interactions among environmental exposure, socioeconomic capacity, institutional arrangements, and spatial context.

This study addresses the empirical gap by examining housing resilience across all 27 regencies and municipalities in West Java between 2020 and 2024, using a mixed-method approach combining panel-data analysis that analysed using OLS and comparative case studies in 4 disaster-affected area.

This study defines housing resilience as the capacity of households, dwellings, and housing systems to maintain safe, healthy, and functional living conditions while adapting to environmental hazards, climate change, and socioeconomic stresses. Resilience is understood as a multidimensional concept emerging from interactions among social, environmental, institutional, and spatial systems — not from housing quality alone.

Result & Discussion

The introduction of district-level fixed effects dramatically increased model performance (R^2 = 0.348 → 0.943), confirming that housing resilience is strongly shaped by place-specific characteristics — governance capacity, infrastructure provision, settlement morphology, environmental conditions, land-use patterns, and historical development trajectories — that extend beyond individual household attributes.

The qualitative case studies reinforce this interpretation. Gedebage, Karawang, Rancaekek, and Cisarua demonstrate that housing decisions frequently involve trade-offs between affordability, livelihood accessibility, and environmental safety.

Ultimately, resilient housing is not determined solely by what households can afford or own, but also by where they live.

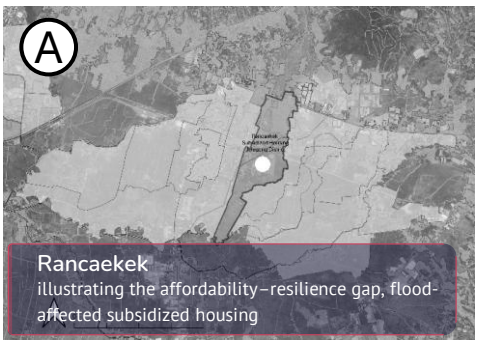
Conceptual Framework

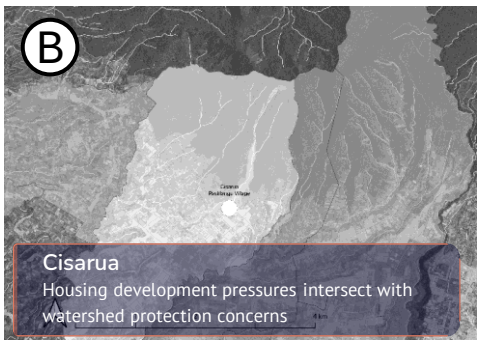
Housing & Tenure
Secure tenure enables households to invest in resilience improvements.

Socioeconomic Capacity
economic and human resources required to maintain housing quality, undertake repairs, and recover from environmental shocks.

Environmental Risk
Housing resilience is influenced by exposure to climate-related hazards, particularly flooding.

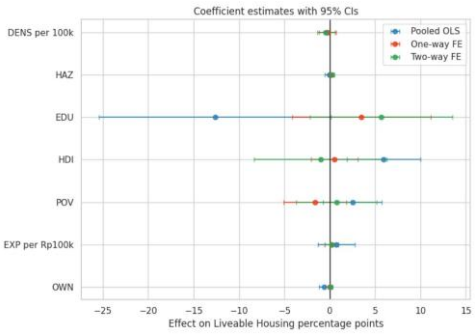
Place-Based Context
A key proposition: resilience is strongly shaped by place-specific conditions

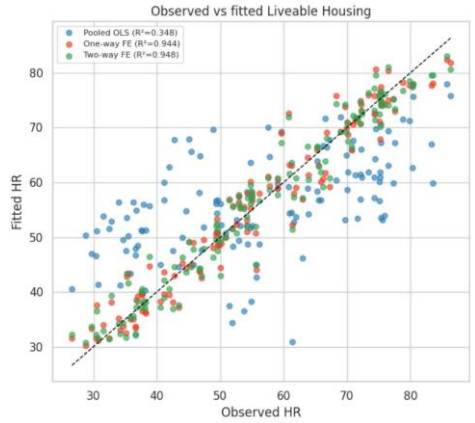






Picture 2. Comparative Case Study Area Delineation A) Rancaekek, B)Cisarua, C) Gedebage, D) Karawang





Research Outcomes

The research has been presented at APNHR 2026, Bali, and accepted at APNHR 2027, RMIT, International Confereces.

Research Manuscript submitted to Q1 Journal, City, Territory and Architecture