Community-led mangrove restoration: Lessons from two divergent socio-ecological pathways in West Kalimantan, Indonesia

CGSEA
CARBON GOVERNANCE IN SOUTHEAST ASIA

ARI
ASIA RESEARCH INSTITUTE
National University of Singapore

Jay Mar D, Quevedo[1], Michelle Ann Miller[1], Muhammad Pramulya[2]
[1] Asia Research Institute, National University of Singapore, [2] Tanjungpura University

INTRODUCTION

Mangroves are among the world's most carbon-dense and ecologically vital coastal ecosystems. Yet restoration efforts frequently fail to account for the deeply social nature of the process.

Mangrove restoration is a socio-ecological process in which ecological interventions and social governance are both vital components that must co-evolve to ensure restoration success and sustainability

However, conflicting views within and between actors can occur, creating governance challenges, including land tenure disputes, conflicting blue carbon narratives, and institutional tensions



RESEARCH AIM

To understand how socio-ecological dynamics shape the durability and scalability of mangrove restoration across divergent community contexts.

KEY QUESTION

How do ecological outcomes, governance structures, and community identity interact to determine restoration success?

MATERIALS and METHODS

The study sites are located in Mempawah Regency, West Kalimantan, Indonesia.



Focus group discussions
Thematic analysis



RESULTS and DISCUSSIONS

Mempawah Mangrove Conservation (MMC)
With 33 active members





	COMPARATIVE OVERVIEW	**POKMAS Pelisir Community** With 30 active members
	Community	
Employed Organic Coastal Defense (OCD) – wave attenuation and patterned planting	Method	Employed the Isosceles Triangle Plants (ITP) method - nursery-based techniques; locally innovated.
~600 ha raised land, ~2 m sediment accretion – ecologically successful	Ecological Outcome	Ecologically uncertain; adapted to harsh conditions but unproven at scale
Land tenure disputes, blue carbon conflicts, institutional tensions	Social Issues	Strong community cohesion; resists external institutional frameworks
Internationally recognized method; patented	Identity & Autonomy	Rejects proven method to preserve epistemic autonomy and local identity
Success rate high; social sustainability challenged	Restoration Durability	Social durability high; ecologically constrained
Ecological success ⟶ governance tensions	Key Tension	Identity preservation ⟶ ecological uncertainty







This study demonstrates that restoration technologies not only reshape coastal ecologies but also reconfigure governance relationships and community legitimacy.

KEY INSIGHTS

- Technical efficacy alone does not determine restoration success.
- Community identity and epistemic autonomy shape restoration pathway choices.
- Governance structures and ecological outcomes co-evolve through dynamic feedbacks.
- Restoration durability requires societal-ecological balance, not just ecological results.

Contact details

CGSEA Project