

HUMAN-CENTERED DESIGN IN COMMUNITY-DRIVEN RESTORATION OF POST-MINING LANDS FOR ENHANCING FOOD SECURITY IN EAST KALIMANTAN, INDONESIA

Emeralda Ayu Kusuma^{1*}, Wahyu Widhi Wicaksono², Ardilla Ayu Kirana³, Annisa Amalia Raharja⁴

^{1,2,4} Management Department, Sekolah Tinggi Ilmu Ekonomi Indonesia, Surabaya, Indonesia

³ Accounting Department, Sekolah Tinggi Ilmu Ekonomi Indonesia, Surabaya, Indonesia

*Corresponding Author: emeraldaayukusuma@stiesia.ac.id

Abstract: Post-mining landscapes in East Kalimantan face complex ecological and socio-economic challenges, including severe soil degradation, ecosystem fragmentation, and ongoing food insecurity for local communities. These problems are exacerbated by illegal mining activities, where operators frequently abandon sites without implementing proper reclamation measures, leaving the land unsuitable for farming or other productive uses. This study introduces a novel Human-Centered Design (HCD) approach embedded within community-driven restoration, prioritizing participatory decision-making, indigenous knowledge integration, and socio-economic empowerment. Employing qualitative methods—in-depth interviews, focus group discussions, participatory observation, and field documentation—the research was conducted in impacted communities across Kutai Kartanegara Regency. Thematic analysis identified four interrelated pillars: (1) inclusive community participation, (2) capacity building with skills transfer, (3) implementation of locally adapted technological interventions, and (4) sustainability in both socio-economic and ecological domains. Findings highlight that early engagement of communities, alignment of technological interventions with local conditions, and targeted training significantly enhance land reclamation outcomes and food security. Building on these insights, the study proposes a Human-Centered Restoration Model (HCRM), conceptualizing a framework where community participation fosters empowerment, empowerment drives effective ecological and social restoration, and supportive governance structures moderate these relationships.

This model contributes to theory by providing a quantitative-ready conceptual framework linking HCD principles with measurable restoration outcomes, while also offering practical guidance for policymakers, NGOs, and practitioners seeking replicable, scalable, and sustainable approaches to post-mining land rehabilitation.

Keywords: Human-Centered Design, Community-Driven Restoration, Post-Mining Land, Food Security, Sustainable Development
