



RESEARCH ARTICLE

Sustainable Development Challenges in Rural Agri-Economies: A Case of Value-Added Investment Among Palm Oil Smallholders in Sarawak

Ricky Anak Kemarau¹  | Daniel Ugih Echoh² | Wee Hin Boo³ | Nik Norliati Fitri Md Nor⁴ | Muhammad Ammar Fakhry Norzin¹ | Zulfaqar Sa'adi³ | Zaini Sakawi¹ | Wan Shafrina Wan Mohd Jaafar¹ | Oliver Valentine Ebo⁵ | Noorashikin Md Noor¹  | Stanley Anak Suab⁶ | Muhamad Solehin Fitry Rosley⁷

¹Earth Observation Centre, Institute of Climate Change, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia | ²Faculty of Social Sciences and Humanities, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia | ³Centre for Tropical Climate Change System, Institute of Climate Change, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia | ⁴Geography Section, School of Distance Education, Universiti Sains Malaysia, Penang, Malaysia | ⁵Geography Program, Faculty of Social Sciences and Humanities, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia | ⁶Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah, Jalan UMS, Kota Kinabalu, Sabah, Malaysia | ⁷Institute of the Malay World and Civilization (ATMA), Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

Correspondence: Ricky Anak Kemarau (rickykemarau@ukm.edu.my)

Received: 16 November 2025 | **Revised:** 20 January 2026 | **Accepted:** 11 February 2026

Keywords: palm oil | rural transformation | smallholders | structural constraints | sustainable development | value addition | willingness to pay

ABSTRACT

Smallholder participation in value-added processing remains minimal in Malaysia's palm oil sector despite sustained policy commitments to inclusive rural upgrading. This study examines the structural, institutional, and behavioural determinants of smallholders' willingness to pay (WTP) for downstream investment in Sarikei, Sarawak, using a mixed-methods approach combining contingent valuation, logistic regression, and qualitative field evidence from 200 smallholders. The results reveal a pronounced intention–action gap: no respondents were engaged in downstream processing, despite expressed conditional willingness to invest. Econometric analysis shows that WTP is driven primarily by structural endowments—income (OR = 1.57), land ownership security (OR = 1.42), education (OR = 1.35), and land size (OR = 1.28)—while age has no significant effect. Perceived economic and social impacts of value addition are uniformly neutral, reflecting the absence of realised participation. Qualitative evidence attributes this gap to high capital requirements, limited access to finance, weak cooperative institutions, insufficient technical capacity, and lack of local demonstration effects, rather than low awareness or motivation. Overall, the findings reframe smallholder upgrading as an institutional feasibility challenge rather than a preference problem, underscoring the need for sequenced, place-based interventions aligned with SDG 1, SDG 8, SDG 9, and SDG 12.

1 | Introduction

Sarawak, one of Malaysia's principal palm oil-producing states, plays a strategic role in the national palm oil economy due to its extensive land availability and favourable tropical climate (Kemarau and Ebo 2022). Palm oil is not only a cornerstone of Malaysia's export earnings but also a globally strategic commodity, supplying over one-third of the world's vegetable oil

demand and underpinning food security, energy transition, and bio-based industrial systems worldwide (Goh and Potter 2022). Rapid expansion of the sector has attracted large-scale commercial investment while simultaneously creating livelihood opportunities for independent smallholders. Globally, smallholders account for approximately 40% of oil palm cultivation, positioning them as indispensable actors in the sustainability and resilience of palm oil supply chains (Hendrawan et al. 2024). Despite