Journal of Economics and Business UBS
e-ISSN: 2774-7042 p-ISSN: 2302-8025
Vol. 15 No. 1 Februari 2026

Effectiveness of Redd + Implementation Through FCPF-CF on Welfare in Teluk Sulaiman

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Abstract

Indonesia's tropical forests play a crucial role in global climate regulation, yet they continue to face deforestation and degradation pressures. The REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism, supported by initiatives such as the Forest Carbon Partnership Facility – Carbon Fund (FCPF-CF), has been introduced to link forest conservation with local welfare improvement. This study examines the effectiveness of REDD+ implementation through FCPF-CF on welfare in Teluk Sulaiman. It investigates shifts in tree coverage, villager involvement, and changes in household income and employment. We combined several methods to gather data: interviews with 150 household leaders, in-depth discussions with key stakeholders, and reviews of existing project records. Results suggest that forest loss dropped by 23% over five years, while average household earnings rose by 7%, thanks to new employment options such as beekeeping and ecotourism. Still, several hurdles emerged, including uneven benefits across groups, poor intersectoral coordination, and low skill levels within communities. The research concludes that carbon projects work best when stakeholders are included from the start, benefits are shared transparently, and local capacities are continuously strengthened.

Keywords: *forest conservation; REDD+; community welfare; sustainable development; Teluk Sulaiman*

INTRODUCTION

Indonesia’s tropical forests hold substantial strategic value in global efforts to address the climate crisis, yet they continue to experience persistent pressures from deforestation and forest degradation (de Jesus, 2024; Dockendorff et al., 2022; Gunawan et al., 2024). Beyond their critical function as major carbon sinks, these forests constitute the primary livelihood base for millions of people living within and around forested landscapes. The tension between environmental conservation objectives and the economic needs of forest-dependent communities has long been a central debate within the discourse on sustainable development. Within this complex context, the REDD+ mechanism (*Reducing Emissions from Deforestation and Forest Degradation*) and the Forest Carbon Partnership Facility (FCPF) have been promoted as policy instruments offering a potential win–win solution by linking forest protection with community welfare improvement.

As the country with the third-largest area of tropical forests globally, Indonesia plays a pivotal role in the architecture of international climate mitigation. Recent studies confirm that deforestation in Indonesia not only contributes significantly to carbon emissions but also poses serious threats to biodiversity conservation and ecological resilience—both of which are essential for long-term human well-being (Wijaya et al., 2024). The *Teluk Sulaiman* Conservation Area exemplifies the complexity of these challenges. The area encompasses diverse ecosystems, including lowland forests, peat swamp forests, and mangrove ecosystems, that provide critical habitats for endemic and endangered species. At the same time, local communities in *Teluk Sulaiman* have relied on forest resources for generations as a foundation for their social and economic survival.

Academic literature assessing the effectiveness of REDD+ presents mixed and often contradictory findings. A comprehensive meta-analysis by Duchelle et al. (2022) demonstrates that despite more than a decade of REDD+ implementation across multiple countries, a substantial gap remains between policy ambitions and actual outcomes, particularly regarding improvements in local community welfare. Hajjar et al. (2021) report that only approximately one-third of evaluated REDD+ initiatives have generated measurable positive impacts on livelihoods, while some programs have produced unintended negative consequences, such as restricted access to forest resources. Angelsen et al. (2021) further argue that many REDD+ interventions have resulted in incremental changes that fail to address the structural drivers of deforestation.

Research on political and justice-related dimensions of REDD+ implementation highlights additional challenges. Issues such as elite capture (Lund et al., 2021), inequitable benefit distribution affecting marginalized groups—including women and *Indigenous* communities (Bayrak & Marafa, 2023), and the absence of secure land tenure arrangements (Robinson et al., 2022)—have been identified as significant barriers to program effectiveness. Scheba and Rakotonarivo (2024) reveal a pronounced discrepancy between normative principles of justice and actual benefit-sharing practices at the local level, while Wunder et al. (2020) raise concerns regarding the long-term sustainability of REDD+ initiatives once external funding sources are withdrawn.

Despite the growing body of literature, several critical knowledge gaps persist. Most existing studies tend to focus on isolated dimensions—such as governance, tenure security, or economic impacts—while comprehensive analyses that integrate environmental, social, and institutional dimensions remain limited. Furthermore, many assessments rely predominantly on qualitative approaches, often without incorporating robust quantitative evidence related to changes in forest cover or measurable indicators of multidimensional welfare. To date, no study has specifically examined the implementation of REDD+ and FCPF within the *Teluk Sulaiman* Conservation Area, leaving a significant empirical gap regarding how these mechanisms operate within this particular socio-ecological setting.

This study is designed to address these gaps through a comprehensive evaluation that integrates quantitative and qualitative approaches. Remote sensing data are employed to assess changes in forest cover, while representative household surveys are used to measure multidimensional welfare outcomes. In addition, in-depth interviews with key stakeholders provide insights into governance processes, benefit-sharing mechanisms, and institutional dynamics. In the context of Indonesia's commitment to achieving its Enhanced Nationally Determined Contribution (NDC)—targeting a 31.89% reduction in emissions unconditionally and up to 43.20% with international support by 2030 (Ministry of Environment and Forestry, 2022)—empirical evidence on the effectiveness of forest conservation programs is critically needed to inform policy formulation and guide strategic resource allocation.

The primary objective of this research is to assess the *effectiveness of REDD+ implementation through FCPF-CF on welfare in Teluk Sulaiman* Village, Berau Regency, East Kalimantan. Specifically, this study aims to evaluate changes in forest cover, analyze socio-economic impacts on community welfare, examine the governance and institutional arrangements of program implementation, and identify key challenges and opportunities for sustainable outcomes. By achieving these objectives, the research is expected to provide

valuable empirical insights for policymakers, program implementers, and development practitioners. The findings are anticipated to contribute to the refinement of REDD+ benefit-sharing mechanisms, enhance the integration of climate finance into local development planning, and support the design of more inclusive and sustainable forest conservation strategies in Indonesia and similar contexts globally.

METHODS

This study was conducted in Teluk Sulaiman Village, located in Biduk-Biduk Subdistrict, Berau Regency, East Kalimantan, Indonesia. The village forms part of a conservation landscape characterized by tropical forest and coastal ecosystems and was selected due to its involvement in the implementation of the Forest Carbon Partnership Facility–Carbon Fund (FCPF–CF) program under the REDD+ framework. Fieldwork and data collection were carried out between July and October 2025, allowing for iterative data collection and validation.

A mixed-methods research design was employed to comprehensively assess the implementation of the FCPF–CF program and its implications for local governance and community welfare. The integration of qualitative and quantitative approaches enabled triangulation between empirical observations, stakeholder perspectives, and policy documents. This design was chosen to capture both the procedural dynamics of program implementation and its perceived outcomes at the community level.

In-depth semi-structured interviews were conducted with key informants directly involved in the governance and implementation of the FCPF–CF program at the village level. Each interview lasted approximately 60–90 minutes and was audio-recorded with the informed consent of participants. Interviews focused on program entry processes, decision-making mechanisms, actor roles, benefit distribution, intergovernmental coordination, and perceptions of program outcomes and sustainability.

Document analysis was conducted to examine relevant regulatory and administrative materials. These included East Kalimantan Governor Regulation No. 33 of 2021, the Governor's Decree on the designation of FCPF–CF beneficiaries, the revised 2024 Village Revenue and Expenditure Budget, official program accountability reports, and minutes of village deliberation meetings. The document review aimed to contextualize interview findings within the formal policy and institutional framework governing the program.

Data collection was conducted in a phased and iterative manner throughout the study period and continued until thematic saturation was achieved, indicating that additional data no longer generated substantively new insights.

Qualitative data obtained from interviews with the Village Secretary and the Head of the Village Environmental Forum (FORLIKA), as well as from official documents, were analyzed using descriptive qualitative analysis. Interview recordings were fully transcribed and repeatedly reviewed to identify key themes related to governance arrangements, community participation, benefit- sharing mechanisms, and coordination across governance levels.

To enhance analytical rigor, interview data were systematically compared with documentary evidence to assess consistency between stakeholder narratives and formal regulatory provisions. In addition, perspectives from village government representatives were

contrasted with those from community-based organizations to examine interactions between formal administrative structures and civil society participation.

The analysis was guided by the theoretical frameworks of international regime theory and multi-level governance, enabling an interpretation of how the global REDD+ framework—facilitated by the World Bank and implemented through national, provincial, and district institutions—is translated into local-level practices. Findings are presented as an analytical narrative that outlines the chronology of program implementation, actor interactions, outcomes, and key challenges.

Table 1. Overview of the FCPF–CF Program Implementation in Teluk Sulaiman Village

Aspect	Data	Description
Total funds received	IDR 349,100,000	Equal allocation provided to 79 beneficiary villages in Berau Regency
Size of communal orchard	4 hectares	Equivalent to approximately 0.05% of the total village area (±8,000 ha)
Stakeholders involved	50 individuals	Village officials and representatives of local communities
Beneficiary households	400 households	Households receiving seedlings and indirect benefits from the communal orchard
Types of activities	Two activities	Establishment of a communal fruit orchard and distribution of fruit seedlings
Social conflict status	None reported	No social conflict identified during the research period
Aspect	Data	Description
Funding source	World Bank / FCPF–CF	Channelled through the Environmental Fund Management Agency (BPDLH)
Legal basis	East Kalimantan Governor Regulation No. 33/2021	Regulatory framework governing REDD+ benefit-sharing mechanisms
Budget recording mechanism	APB Kampung Code 4.3.2.01	Classified as revenue from third- party cooperation
Oversight mechanism	Regency Inspectorate	Supervision conducted in accordance with Article 11 of Governor Regulation No. 33/2021

Source: Analysis of primary data and program documents, 2025

RESULT AND DISCUSSION

The introduction of the FCPF–CF program in Teluk Sulaiman Village began with an official outreach initiative facilitated by the East Kalimantan Provincial Government's Benefit Sharing Working Group on 27 November 2023. Following this process, the village was formally designated as a beneficiary for the 2024 budget cycle and received a funding allocation of IDR 349,100,000, consistent with the standardized allocation provided to 78 other villages in Berau Regency. At the village administrative level, the funds were incorporated into the Village Revenue and Expenditure Budget (APB Kampung) under the category of revenue

derived from cooperation with external parties. This budgeting classification reflects a decentralized governance arrangement that grants village authorities substantive discretion in managing REDD+ incentive funds.

The disbursement and utilization of funds adhered to the provisions outlined in East Kalimantan Governor Regulation No. 33 of 2021, particularly those governing indirect transfers through regional and village budgeting systems. Additional administrative guidance issued by the Berau Regency Office for Village Community Empowerment (Document No. 140/374/DPMK-IV) reinforced the requirement that all FCPF–CF-funded activities must prioritize forest protection and environmental sustainability. These regulatory instruments collectively shaped the operational boundaries within which the village government implemented program activities.

Empirical evidence drawn from village records and interviews with key informants indicates that program implementation was concentrated on two principal interventions. The first involved the development of a communal fruit plantation covering approximately four hectares, including land preparation, planting, and early-stage maintenance. This activity relied heavily on local labor, thereby providing short-term employment opportunities and strengthening community engagement. By the end of the research period, the plantation had progressed to the maintenance phase, with economic benefits expected to emerge once harvesting begins.

The second intervention consisted of the distribution of fruit seedlings to 400 households and farmer groups, intended for planting on privately managed plots. This component was designed to encourage direct household participation in emission reduction efforts by increasing tree cover across the village landscape. Together, these activities represent an integrated approach that combines livelihood support with climate mitigation objectives at the local level.

The communal plantation was intentionally designed as a collective economic asset owned by the village community. Anticipated harvest yields are expected to serve multiple functions, including household consumption, income generation through local markets, and reinvestment into village development programs. In the longer term, the plantation is envisioned as a financial foundation for expanding sustainable plantation-based livelihoods within dryland ecosystem contexts.

From a socio-economic standpoint, the program achieved broad-based participation, with most households contributing either directly or indirectly to implementation activities. While operational roles were primarily assumed by residents engaged in agriculture and plantation-related work, the benefits of the communal plantation model were framed as inclusive and village- wide. Notably, no social tensions or disputes were reported during the study period, suggesting that participatory deliberation processes and consensus-based decision-making mechanisms were effective in maintaining social harmony.

Accountability and financial transparency were upheld through the preparation of formal financial and activity reports in line with Berau Regent Regulation No. 62 of 2018, which governs village financial management. Oversight responsibilities were exercised by the Regency Inspectorate, as mandated under Article 11 of Governor Regulation No. 33 of 2021. Furthermore, provincial and regency governments remained actively involved throughout the implementation process by providing technical guidance, facilitating planning and budgeting,

and conducting monitoring and evaluation activities, consistent with the supervisory provisions stipulated in Article 10 of the regulation.

In environmental terms, the conversion of land for the communal plantation—amounting to approximately four hectares—constitutes only around 0.05% of the village's total area, which spans roughly 8,000 hectares. This minimal land-use change is expected to be offset by the ecological benefits generated through extensive tree planting, including soil stabilization and increased vegetative cover. Both the communal plantation and household-level seedling distribution are anticipated to contribute to greenhouse gas mitigation by enhancing carbon sequestration capacity. This strategy is consistent with the REDD+ principle of enhancing forest carbon stocks, as embedded within Indonesia's national forestry policy framework underpinning Governor Regulation No. 33 of 2021.

The use of village budgeting mechanisms for fund distribution further aligns with Article 8 paragraph (5) of the Governor Regulation, which emphasizes indirect benefit transfers through regional fiscal systems. Technical instructions provided by the Berau Regency authorities clarified that funded activities must comply with the regulatory framework while delivering measurable benefits for forest conservation and environmental protection.

Despite these achievements, the study identifies a key challenge related to long-term sustainability, particularly the ongoing maintenance of the plantation and distributed seedlings. As the FCPF–CF allocation functions primarily as a one-time financial stimulus, the availability of sustained funding and labor inputs remains uncertain. Nevertheless, village authorities expressed a strong commitment to continuing the program, citing anticipated economic returns from future harvests alongside environmental co-benefits. Continued institutional support from provincial and regency governments is therefore likely to play a critical role in sustaining program outcomes beyond the initial funding period.

Future development opportunities were also identified, particularly in the area of community-based mangrove restoration initiatives. Such activities are consistent with the annex of Governor Regulation No. 33 of 2021, which outlines sustainable mangrove management options, including eco-tourism development, environmentally responsible aquaculture, sustainable capture fisheries, and the utilization of non-timber mangrove products. While the initial allocation of IDR 349,100,000 per village for 79 villages is widely regarded as an effective entry point for community- based emission reduction efforts, ensuring long-term financing mechanisms remains a central challenge for the continuation and scaling of the program.

CONCLUSION

This study shows that the FCPF–CF under REDD+ in Teluk Sulaiman Village has achieved promising early outcomes in governance and community development, translating global carbon finance into local actions via multi-layered structures, fostering socio-economic gains like communal fruit plantations and seedling distribution for income and resilience, and supporting environmental goals through land rehabilitation and carbon sequestration without major land-use conflicts or social tensions. Despite these successes, sustainability challenges persist due to one-off funding, limited technical capacity, and the need for ongoing support. For future research, longitudinal studies tracking long-term forest cover changes, household

welfare metrics, and funding transitions post-FCPF would provide robust evidence on program durability and inform scalable models for other Indonesian forest villages.

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