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From Forests to Plantations: Social Impacts of Palm Oil Expansion in South Papua Indonesia

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Abstract: Rapid palm oil plantation expansion in frontier locations like Merauke, South Papua, has raised socio-environmental problems, particularly for indigenous communities whose livelihoods and traditional land rights are threatened. Comparing corporate willingness to pay (WTP) for externalities with community willingness to accept (WTA) compensation, this study examines the social and environmental consequences of palm oil development. Three plantation businesses and six indigenous villages provided data through contingent value surveys, key informant interviews, and institutional mapping. Due to local concerns about environmental degradation and socio-cultural displacement, the WTP-WTA gaps are considerable. Regression research indicates that environmental quality and social well-being significantly influence WTA, whereas demographic characteristics do not. Institutional trust and governance systems mediate community expectations and corporate involvement initiatives. This study proposes a context-sensitive valuation system that incorporates economic assessment, socio-cultural legitimacy, and participatory governance to advance sustainability. Policy innovation is needed to develop localized CSR indicators, formal community engagement mechanisms, and regulatory frameworks that internalize WTP–WTA dynamics into sustainable land-use governance. To promote socially equitable and environmentally sustainable palm oil production in Papua, corporate strategies must align with indigenous knowledge systems and community-driven development goals.

Keywords: Contingent Valuation Method; Customary Land Rights; Corporate Social Responsibility; Socio-Environmental Cost; Institutional Mediation; Willingness to Accept (WTA); Willingness to Pay (WTP).

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1. Introduction

Palm oil has emerged as one of the world's most economically significant yet controversial commodities. Globally, it is a crucial ingredient in diverse industries, including food, cosmetics, and biofuels, contributing significantly to a market valued

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at over USD 60 billion [12]. For Indonesia, currently the world's largest producer of palm oil, the industry is vital, contributing 13.5% to non-oil and gas exports and approximately 3.5% to the national GDP. Additionally, palm oil plantations offer employment opportunities to millions, positioning the sector as a crucial driver for rural development and a potential contributor to global green energy transitions. However, the rapid expansion of oil palm cultivation has generated severe social and environmental impacts [22]. The industry's unchecked growth has led to widespread deforestation, significant biodiversity loss, and increased greenhouse gas emissions [10]. Moreover, land conflicts, human rights violations, and marginalisation of indigenous communities have attracted global scrutiny. Efforts, such as the Roundtable on Sustainable Palm Oil (RSPO), have sought to mitigate these negative effects; however, their effectiveness remains limited due to high compliance costs and insufficient enforcement capabilities, particularly in frontier regions like Papua New Guinea [15]. RSPO certifications often fail to reach remote areas, and when they do, the standards are not always translated into culturally relevant or locally enforceable practices [1].

In Papua, Indonesia's easternmost province, these challenges are significantly heightened due to the area's unique ecological biodiversity, cultural richness, and underdeveloped regulatory infrastructure. In Merauke Regency, large-scale plantations have expanded onto the ancestral lands of indigenous groups, such as the Marind, who view their land not just as an economic asset but as an integral element of their cultural identity, governance, and spiritual well-being [7]; [19]. The spiritual cosmologies of the Marind interweave ecological elements with ancestral relations, rendering the forest not only a source of livelihood but also a sacred entity. Despite corporate claims of Corporate Social Responsibility (CSR) initiatives aimed at offsetting negative impacts, these programs frequently lack specific benchmarks and transparent reporting. Although Government Regulation No. 47 of 2012 and Law No. 40 of 2007 require companies to allocate CSR funds fairly, they do not prescribe clear, enforceable standards for doing so. Consequently, corporate social and environmental spending varies widely, often poorly aligned with local expectations, which exacerbates distrust and social tensions [9]. Research by Barreiro et al. [2] in Kalimantan illustrates the financial implications of social conflict, showing that companies face direct losses ranging from USD 70,000 to USD 2.5 million, as well as reputational damage of up to USD 9 million, which amounts to 177% of their annual investment per hectare.

This finding prompts a critical question about the efficacy of proactive, participatory CSR engagement versus reactive conflict management. Despite a substantial body of literature on the economic benefits and environmental costs of palm oil, a notable gap remains in integrating corporate and community perspectives, particularly in socio-culturally complex regions like Papua. Current valuation methods typically employ output-based metrics (e.g., infrastructure built) rather than evaluating subjective perceptions of fairness, identity loss, or long-term sustainability. Additionally, institutional dynamics affecting CSR implementation, including roles played by customary councils, churches, and local governments, remain inadequately explored [10]; [21]. The power asymmetries inherent in land acquisition processes, weak monitoring frameworks, and insufficient inclusive dialogue obscure a clear understanding of how social costs are distributed and managed [11]. There is also minimal attention to how intersecting vulnerabilities—such as gender, age, or clan status—shape experiences of exclusion or marginalisation [18]. This research aims to bridge these gaps through a multifaceted approach. First, it seeks to assess and compare the monetary values of social and environmental costs from both corporate willingness-to-pay (WTP) and community willingness-to-accept (WTA) perspectives, utilising contingent valuation methods. Secondly, it examines the socio-economic and perceptual factors that influence community expectations for compensation [6].

Lastly, the study analyzes the institutional and stakeholder dynamics that shape CSR implementation and socio-environmental governance in Merauke Regency. Theoretical and empirical contributions of this study are significant. Theoretically, it enriches discussions on sustainability and development by providing dual-perspective valuations of social costs, bridging gaps between corporate accountability and community agency. Methodologically, the study employs an interdisciplinary approach that combines economic valuation and institutional analysis to comprehensively capture both tangible and intangible impacts. Furthermore, it responds directly to broader academic calls to decolonize environmental governance by placing Indigenous perspectives at the forefront of analyzing CSR legitimacy and effectiveness. Empirically, this research contributes valuable data on WTP-WTA gaps, derived from household surveys, focus group discussions, and key informant interviews across six villages in three plantation zones. Incorporating community perceptions and priorities into valuation models provides grounded and culturally informed insights crucial for informed policymaking and corporate strategies. Ultimately, this study proposes a forward-thinking framework for inclusive, conflict-sensitive CSR in frontier regions like Papua, where achieving sustainability requires balancing ecological integrity and social justice. In doing so, it seeks to guide future policy development, corporate strategies, and academic discourse, addressing the complex interplay between economic growth, environmental sustainability, and social equity in the context of palm oil expansion.

2. Literature Review

The expansion of palm oil cultivation represents a paradox of development—promising economic advancement while imposing severe environmental degradation and social disruption. Social and environmental costs in this context refer to externalities that are not captured in market prices but instead borne by local communities and ecosystems. These costs encompass a wide range

of impacts, including deforestation, biodiversity loss, cultural displacement, weakened traditional governance institutions, increased health risks, and inter-generational poverty traps [13]. In ecologically and culturally sensitive regions such as Papua, these externalities carry deep socio-spiritual significance, challenging the adequacy of conventional cost-benefit frameworks. In academic discourse, the concept of social cost is often approached through the economic valuation of non-market goods such as ecosystem services, access to clean water, traditional livelihoods, and intangible cultural heritage.

Assigning monetary value to such complex and non-material losses, however, remains a significant methodological and ethical challenge. Environmental costs tend to be more quantifiable through indicators such as land-use change assessments or biodiversity loss metrics; however, these measurements often fail to capture the lived experiences of affected communities, potentially leading to underestimations of long-term social harm. Furthermore, the monetisation of intangible cultural and spiritual losses often reduces rich, place-based epistemologies into abstract Figures that can obscure their true significance to indigenous life-worlds [14]. A growing body of literature has employed the Contingent Valuation Method (CVM) as a tool to estimate the economic value of non-market goods. CVM elicits individual willingness to pay (WTP) for the conservation or restoration of an asset, or willingness to accept (WTA) compensation for its loss. This dual valuation is particularly pertinent in assessing the trade-offs between corporate operations and community well-being in resource-intensive sectors. For instance, Barreiro et al. [2] employed CVM to estimate the financial impact of unresolved social conflict in Kalimantan's plantation sector, revealing potential losses of up to 177% of the annual per-hectare investment. Similarly, Walyoto and Peranginangin [23] demonstrated that integrating carbon and social cost pricing in Jambi did not necessarily compromise firm profitability.

These studies support the view that early investment in inclusive CSR practices and social dialogue may be more cost-effective than post-conflict remediation. Despite its widespread application, CVM faces notable limitations in culturally diverse and collectivist contexts, such as those found in Papua New Guinea. The method's assumption of rational, individual utility-maximising behaviour may not align with indigenous values, cosmologies, or communal land ownership systems. In many Papuan communities, decisions regarding land and compensation are made collectively, guided by elders or customary leaders, rather than through atomised, individual decision-making. Consequently, adapting CVM tools to local socio-cultural settings is essential to ensure the validity and interpretability of the results. Some scholars advocate for hybrid methodologies that combine CVM with deliberative valuation processes, wherein community members engage in facilitated discussions to articulate shared values and negotiate compensation norms. Corporate Social Responsibility (CSR) has emerged as a strategic and ethical mechanism for addressing the externalities of corporate activity.

Rooted in stakeholder theory and institutional theory, CSR posits that firms bear obligations not only to shareholders but also to a broader set of stakeholders, including communities, governments, and civil society organisations [20]; [17]. CSR frameworks often aim to address environmental sustainability, labour rights, community development, and ethical governance. However, CSR implementation in practice is highly variable, shaped by internal corporate strategies, external governance pressures, and the expectations of local communities. In Papua, CSR tends to be infrastructure-driven, focusing on material outputs such as roads or clinics, with limited community participation in planning or evaluation processes [4]; [5]. This instrumentalist approach to CSR—where tangible outputs are prioritised over intangible benefits—frequently fails to address deeper grievances related to land dispossession, erosion of identity, and exclusion from governance [8]. Indonesia's CSR regulatory landscape is similarly fragmented. While national laws mandate CSR contributions, they fall short of specifying enforceable standards, and regional disparities in regulation exacerbate inconsistencies. Provinces like East Kalimantan have introduced specific legal benchmarks (e.g., Perda No. 3/2013), but such measures are absent in Papua, resulting in weak accountability and governance inefficiencies. Without clear guidelines, companies often define and assess their CSR efforts internally, leading to significant variations in the scale, focus, and transparency of CSR programs. This lack of standardisation complicates efforts to measure CSR effectiveness and to hold companies accountable for equitable development outcomes.

The governance of land in Papua is characterised by pluralistic legal frameworks that overlap and frequently conflict. These include statutory land laws, customary (adat) systems, and sector-specific regulations. This legal pluralism creates ambiguity that often benefits more powerful actors. Scholars such as Berenschot and Dhiaulhaq [24] and Calo et al. [3] have described how the "powers of exclusion"—including legal, economic, coercive, and normative tools—are mobilised to dispossess indigenous communities of their land rights. In Merauke, the Marind people often face significant disadvantages in land negotiations due to limited legal literacy and marginal representation in decision-making forums [16]. Furthermore, language barriers, power imbalances, and mistrust in state institutions hinder meaningful participation in land governance. The absence of culturally competent mediation structures and the lack of clear communication about CSR terms exacerbate this governance gap, rendering CSR efforts ineffective or even counterproductive. The result is not only a failure to achieve development goals but also the perpetuation of historical injustices.

Although substantial research has addressed the economic and environmental implications of palm oil expansion, several critical gaps persist. Few studies employ a dual-perspective valuation framework that simultaneously captures corporate and community perceptions of value. Even fewer have contextually adapted CVM approaches that incorporate indigenous

worldviews, communal property regimes, and non-monetary notions of well-being. In addition, institutional analyses of CSR in frontier regions have disproportionately focused on formal state and corporate actors, overlooking the roles of informal governance institutions such as tribal councils, churches, and kinship networks, which often hold more legitimacy in the eyes of local populations. These institutions play critical roles in mediating conflict, translating regulatory language, and shaping community interpretations of CSR legitimacy. Moreover, CSR is too often treated as a technical or philanthropic endeavour rather than a political space where contestations over rights, recognition, and legitimacy are actively negotiated. Recognising CSR as a site of political negotiation invites a broader set of evaluative criteria—ones that account for power asymmetries, epistemic justice, and the politics of representation.

To address these complexities, this study is grounded in three interrelated theoretical frameworks. First, Contingent Valuation Theory is used to operationalise the economic value of social and environmental costs from both corporate (WTP) and community (WTA) perspectives. Second, Stakeholder Theory serves to evaluate the inclusiveness, responsiveness, and legitimacy of CSR strategies in aligning firm interests with community expectations. Third, Political Ecology provides a lens to interrogate the institutional power dynamics, cultural narratives, and exclusionary practices that shape environmental governance in Papua. These frameworks are integrated into a conceptual model, which connects valuation outcomes with institutional configurations and stakeholder perceptions. The model posits that community WTA is influenced not only by material considerations but also by the legitimacy and inclusiveness of CSR processes. At the same time, corporate WTP is shaped by internal governance cultures, reputational risk, and perceived regulatory threats. The integration of these frameworks provides a comprehensive and nuanced understanding of how compensation, governance, and justice intersect in the context of palm oil development in Papua New Guinea (Figure 1).

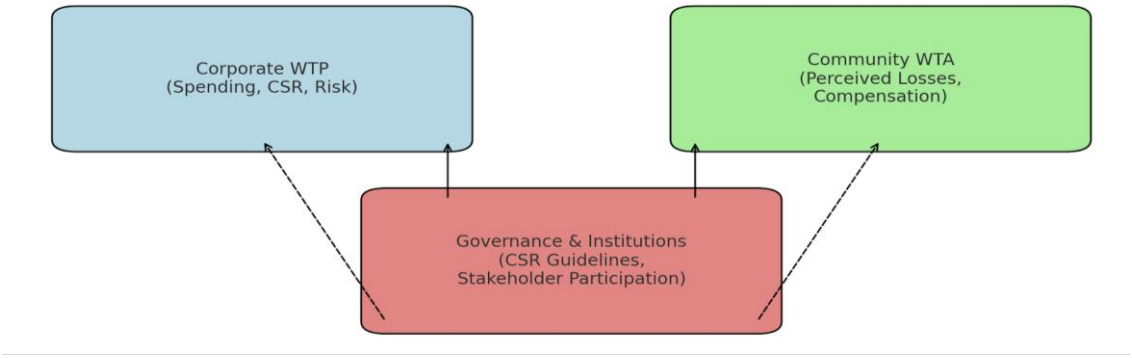

Figure 1: Conceptual framework linking CSR, WTP-WTA, and governance institutions

The diagram illustrates the dynamic relationships among three core components. First, Corporate Willingness to Pay (WTP) represents firms' readiness to invest in Corporate Social Responsibility (CSR) strategies as a means of managing risk and ensuring regulatory compliance. Second, Community Willingness to Accept (WTA) captures the local population's expectations for compensation, rooted in their perceived losses—both tangible and intangible—arising from corporate activities. Third, Governance and Institutional Structures function as intermediaries that mediate and regulate the interaction between corporate interests and community priorities, influencing how value is negotiated, distributed, and legitimised within the CSR process.

3. Methodology

3.1. Research Design and Analytical Approach

This research employs a mixed-methods approach, combining quantitative and qualitative methodologies to examine the multifaceted social and environmental consequences of palm oil expansion in Merauke, Papua. At its core, the study utilises the Contingent Valuation Method (CVM)—a widely applied tool in environmental economics—to assess two key perspectives: The Willingness to Pay (WTP) from the corporate side and the Willingness to Accept (WTA) compensation from indigenous communities affected by plantation development. The analytical framework is structured around three pillars. First, it evaluates the economic value assigned to CSR by companies and the compensation expectations of local communities. Second, it examines the socio-economic and perceptual variables that influence community WTA, including income, education, and perceptions of environmental degradation. Third, it examines the institutional configurations and stakeholder relationships that govern the execution of CSR, with a particular focus on the roles of customary authorities, local governments, and corporate actors. This integrative design enables the study to assess how well CSR strategies align with local expectations, particularly in governance environments where regulatory oversight is limited and customary land rights are contested.

3.2. Study Area and Sampling Strategy

The study was conducted in Merauke Regency, a frontier district in South Papua Province characterised by extensive oil palm concessions and strong customary land claims. Research focused on three major companies—PT Bio Inti Agrindo (BIA), PT Agrinusa Persada Mulia (APM), and PT Agriprima Cipta Persada (ACP)—operating in the subdistricts of Muting, Ulilin, and Elikobel. These companies were purposively selected based on their geographic overlap with indigenous territories, documented land-related disputes, and logistical accessibility for field research. To ensure representativeness, the study selected six villages from the companies' respective operational zones. The selection criteria included ethnic diversity, gender representation, and a range of age groups, ensuring that the sample captured the perspectives of different social segments within the communities.

3.3. Data Collection Methods

To enhance analytical robustness, data collection relied on four primary methods, enabling triangulation across sources and methodological coherence.

- Document Review involved examining environmental management reports (UKL-UPL), CSR disclosures, and local government records from the Investment and Environmental Offices. This provided baseline data on corporate spending, legal compliance, and regulatory gaps.
- Key Informant Interviews (KIIs) were conducted with CSR managers, sustainability officers, and local authorities. These semi-structured interviews probed CSR planning rationales, corporate risk mitigation strategies, and WTP responses, using a structured bidding game approach to quantify company perspectives.
- Focus Group Discussions (FGDs) were held separately for men and women in each village, utilising the World Café method to facilitate inclusive dialogue. Topics included environmental degradation, changes in livelihoods, and expectations for compensation, providing qualitative insights into the community's valuation of losses.
- Household Surveys were administered to 120 respondents, with 40 participants per company cluster chosen through quota sampling. The survey instrument gathered data on socio-economic status, perceptions of environmental change, and WTA estimates through a payment card format.

All interviews and FGDs were conducted in Bahasa Indonesia and subsequently translated into English for analysis. Ethical clearance was obtained from a local institutional review board, and informed consent was secured from all participants.

3.4. Econometric Model for WTA Estimation

To quantitatively model the determinants of Willingness to Accept (WTA) compensation among community members, a multiple linear regression model was employed. The equation is specified as follows:

$$\mathrm{WTAi} = \beta 0 + \beta 1\mathrm{Agei} + \beta 2\mathrm{Genderi} + \beta 3\mathrm{Educationi} + \beta 4\mathrm{Incomei} + \beta 5\mathrm{PrefEnvi} + \beta 6\mathrm{PrefLifei} + \epsilon \mathrm{i}$$

In this model:

- WTA denotes the monthly compensation respondents are willing to accept (in IDR).
- PrefEnv and PrefLife are binary variables indicating the respondents' perceived environmental quality and quality of life, respectively.
- ε is the error term capturing unexplained variance.

The model's reliability was assessed using R^2 and adjusted R^2 values, while the significance of coefficients was tested via p-values. Multicollinearity was checked using the Variance Inflation Factor (VIF) and tolerance statistics to ensure robust estimations.

3.5. Data Analysis and Integration

The analysis employed an iterative and layered approach, enabling the integration of both qualitative narratives and quantitative metrics.

- Qualitative data from KIIs and FGDs were transcribed, coded, and analysed thematically using NVivo software. Coding was guided by both inductive themes emerging from the data and deductive categories based on the study's objectives. Triangulation across methods and sites strengthened internal validity.

- Quantitative data were analysed using SPSS, where descriptive statistics profiled respondent characteristics and regression analysis identified key predictors of WTA. WTP–WTA gaps were evaluated using Wilcoxon signed-rank tests to determine statistically significant discrepancies between corporate and community valuation.
- Finally, a triangulation process was used to merge the two data streams. Insights from qualitative narratives were used to contextualise statistical trends, and discrepancies between datasets were explored to uncover the institutional and socio-political dynamics that underlie stakeholder attitudes and behaviour.

4. Discussion

The analysis juxtaposes corporate Willingness to Pay (WTP) for social and environmental mitigation against the community's Willingness to Accept (WTA) compensation. A consistent pattern emerges from the data: environmental expenditures are generally higher than social costs across all companies, but discrepancies in WTP and WTA vary significantly. Sample PKS 1 demonstrates the highest allocation for both environmental (IDR 1,200 million) and social costs (IDR 850 million). Notably, this company's WTP of IDR 220 million per household per month closely aligns with the community's WTA of IDR 190 million, suggesting effective Corporate Social Responsibility (CSR) practices, likely facilitated by proactive communication and visible program impacts. The high environmental expenditure may also indicate stronger regulatory compliance or forward-looking risk management. In contrast, Sample PKS 2 shows moderate budget allocations (IDR 620 million for social and IDR 980 million for environmental costs), yet community WTA (IDR 220 million) surpasses corporate WTP (IDR 180 million). This misalignment reflects dissatisfaction likely rooted in insufficient engagement or misaligned CSR priorities. Qualitative feedback suggests that CSR initiatives by PKS 2 were perceived as one-size-fits-all and failed to address local livelihood challenges or cultural preservation needs.

The lack of co-design mechanisms for program planning further alienated communities, reinforcing perceptions of paternalism and tokenism. In the case of Sample PKS 3, the company reports the lowest budget for social (IDR 400 million) and environmental (IDR 750 million) costs, but surprisingly records the highest WTP at IDR 244 million. Nevertheless, the community's WTA remains higher at IDR 260 million, suggesting persistent socio-cultural grievances, such as unresolved land tenure disputes and inadequate recognition of intangible losses, including spiritual and cultural erosion. Further compounding this gap is the lack of trust and historical trauma stemming from previous land negotiations, where communities felt coerced or misinformed. This signals that WTP, when not accompanied by restorative justice or reconciliation processes, may be perceived as insincere or opportunistic. These cases demonstrate that financial investment alone is insufficient; the effectiveness of CSR depends heavily on how funds are deployed, how the community perceives them, and whether programs align with local values and expectations. Importantly, it also underscores the temporal dimension of trust-building.

Companies with longer histories of continuous presence and engagement, as seen in PKS 1, tend to achieve better alignment with community WTA compared to newer or more transactional actors, such as PKS 3. To better understand these dynamics, a comparative analysis of WTP and WTA across the companies highlights the importance of contextualising CSR practices through a Social-Environmental Cost Index. For PKS 1, near parity between WTP and WTA suggests a balanced relationship, likely grounded in effective and culturally sensitive CSR strategies. In PKS 2, the gap between WTP and WTA implies that current corporate efforts are falling short of addressing local expectations. The most striking gap is evident in PKS 3, where high corporate willingness to pay is not matched by community satisfaction, indicating that monetary Figures alone cannot compensate for deeper social disruptions. These discrepancies affirm the need for a nuanced Social-Environmental Cost Index tailored to Papua's unique context. Such an index would incorporate the spiritual and cultural values of indigenous communities, unmet basic needs that are often overlooked in financial assessments, and the quality of relationships and trust between corporations and communities. The absence of such a framework risks reducing CSR to a transactional process, rather than fostering long-term, equitable development partnerships.

A regression analysis was conducted to further investigate what shapes the community's willingness to accept compensation. Using a multiple linear regression model with six variables—age, gender, education, income, environmental preference, and social life preference—the study found that only environmental and social life preferences had a significant influence on WTA. The coefficient for social life preference (–0.265, $p = 0.010$) and environmental preference (–0.333, $p = 0.100$) suggests that respondents who perceive their social or environmental conditions as poor demand higher compensation. This supports the premise that perceived degradation—whether ecological or social—strongly shapes community expectations. Interestingly, demographic factors such as age, gender, and income were not statistically significant, indicating that WTA is shaped more by collective experiences of marginalisation than by individual characteristics. This was reinforced by qualitative data from FGDs, where participants emphasised the emotional and cultural consequences of plantation expansion, such as loss of traditional livelihoods and spiritual displacement. For instance, women often voiced concerns over diminished access to sago groves and sacred groves, which are central to their cultural and subsistence roles.

A visualisation of WTA responses based on perceived quality of life shows that communities that rated their environmental or social conditions as “poor” consistently demanded higher compensation than those reporting “good” conditions. Specifically, those who perceived environmental degradation requested IDR 250 million, compared to IDR 180 million from those who felt their environment was still intact. Similarly, those with negative social perceptions demanded IDR 240 million, while others asked for IDR 185 million. These patterns further highlight how subjective perceptions of decline are directly tied to compensation expectations, underscoring the need to incorporate perceptual indicators into any CSR evaluation framework. This aligns with the need for a context-sensitive Social-Environmental Cost Index, which not only quantifies financial inputs but also tracks how communities experience and respond to change. Moreover, the inclusion of perceptual metrics allows for real-time adjustments in CSR programming, facilitating adaptive management and conflict prevention.

Building on these findings, a conceptual framework was developed to illustrate the interaction between CSR strategies, community perceptions, and institutional mediation. At the corporate level, WTP is shaped by budget allocation and strategic intent, often influenced by internal governance culture, regulatory demands, and reputational risk. On the community side, WTA is shaped by perceived environmental and social losses. These perceptions, whether of pollution, land alienation, or weakened social cohesion, directly influence the compensation communities demand. Crucially, institutional trust serves as a mediating factor. When governance structures are transparent and inclusive, WTP and WTA tend to align. But where institutions are weak or legitimacy is in question, distrust prevails, exacerbating the WTP-WTA divide. The framework also includes a feedback loop, wherein community responses to CSR shape future corporate behaviour. A well-designed program can reduce future compensation demands, while a poorly executed one can heighten grievances and raise expectations. This cyclical interaction implies that CSR must be viewed not as a static obligation but as an evolving social contract, contingent on reciprocal accountability and ethical stewardship. Finally, the study underscores the social and institutional implications of the observed WTP-WTA gaps. Despite national regulations encouraging CSR, there remains a governance vacuum at the regional level in Papua. Without locally grounded regulations, CSR risks becoming a symbolic gesture rather than a transformative process.

FGDs revealed that communities feel excluded from CSR planning, particularly women and youth, and that the focus on physical infrastructure often overlooks cultural and spiritual needs. Traditional leaders, churches, and community organisations—despite their moral authority—remain underutilised in CSR governance. This institutional underrepresentation is especially problematic in settings where formal state presence is weak or mistrusted. Strengthening the role of customary institutions in CSR negotiation, implementation, and monitoring can thus serve as a mechanism for cultural validation and procedural justice. To bridge this gap, the study advocates for the institutionalisation of inclusive forums, participatory monitoring bodies, and regulatory frameworks tailored to Papua’s socio-cultural landscape. Furthermore, the proposed Social-Environmental Cost Index must encompass three pillars: cultural values, including the sacredness of ancestral lands; basic development needs, such as health and education; and indigenous aspirations, encompassing community-defined visions of sustainability. These pillars can serve as evaluative criteria for CSR legitimacy and effectiveness, providing both quantitative and qualitative benchmarks for assessing their effectiveness. Only by embedding these elements into CSR design and execution can corporate practices gain legitimacy and ensure long-term harmony in frontier regions like Merauke. This reaffirms that compensation dynamics are not just financial—they are deeply relational, contextual, and dependent on trust, dialogue, and mutual recognition.

5. Conclusion

This study presents a multidimensional evaluation of the social and environmental costs associated with oil palm plantation expansion in Merauke, Papua, through a novel framework integrating Willingness to Pay (WTP) and Willingness to Accept (WTA) analyses. Comparing corporate valuations with community compensation expectations highlights a persistent underestimation by firms of the intangible losses suffered by indigenous communities. Despite substantial investments in CSR initiatives, community perceptions of fairness and benefit remain low, particularly in areas marked by ecological degradation and cultural displacement. Regression findings indicate that subjective perceptions—especially those related to environmental integrity and social cohesion—are the most robust predictors of WTA. These results emphasise that valuation is not merely a financial calculation but a socio-cultural process embedded in lived experience, historical memory, and spiritual beliefs. Corporate efforts that ignore these dimensions risk exacerbating tensions rather than building resilience.

The study also highlights the crucial role of governance. Weak regulatory enforcement, lack of localised CSR standards, and exclusion of customary institutions have collectively undermined trust and reduced the efficacy of corporate-community engagement. This reinforces the need to move beyond compliance-oriented CSR models toward participatory, justice-centred frameworks that reflect the values and aspirations of indigenous communities. For policymakers, the findings advocate for the development of region-specific CSR regulations in Papua, drawing on examples such as East Kalimantan's Perda No. 3/2013. Such frameworks should mandate CSR contributions proportionate to the size of operations, ecological sensitivity, and social vulnerability.

Local governments must also institutionalise participatory mechanisms, including formal consultations, multi-stakeholder committees, and grievance redress systems. For corporate actors, the study highlights the importance of culturally grounded CSR strategies that incorporate indigenous knowledge, co-creation processes, and relational accountability. Transparency should be enhanced through public CSR reports, third-party audits, and participatory monitoring tools such as social-environmental scorecards. Building long-term legitimacy requires companies to view CSR not as charity or risk management, but as a pathway to ethical partnership and mutual prosperity. For civil society organisations, the findings suggest critical roles in mediating dialogue, building capacity, and monitoring CSR implementation. Strengthening indigenous institutions and amplifying the voices of marginalised groups, especially those of women and youth, will be vital for embedding equity into sustainability transitions.

5.1. Limitations and Future Work

While this study offers rich empirical insights, several limitations warrant consideration. First, its geographic scope is limited to Merauke Regency and may not fully capture the diversity of experiences across other Papuan or Indonesian regions. Variability in ecological, cultural, and institutional conditions necessitates caution in generalising findings. Second, the Contingent Valuation Method (CVM) relies on stated preferences, which may diverge from real-world behaviours due to hypothetical bias. While the use of payment cards and bid games enhances reliability, future studies could integrate revealed preference methods or experimental approaches to triangulate findings. Third, the study did not sufficiently explore intersectional dimensions such as gender, age, or inter-generational knowledge transfer. Given that women often act as custodians of ecological and cultural knowledge, their exclusion from CSR planning undermines both the legitimacy of the process and the effectiveness of the outcomes. Future research should prioritise gender-sensitive methodologies and assess how CSR interacts with intra-community dynamics. Moreover, the study's institutional analysis, while robust, could benefit from greater emphasis on traditional cosmologies and ontologies that inform indigenous worldviews.

Understanding how concepts of “development,” “value,” or “compensation” are interpreted within local epistemologies would provide a deeper foundation for designing equitable CSR frameworks. Future research could also adopt a longitudinal design to capture the temporal evolution of WTP and WTA as CSR programs mature or community conditions shift. Comparative studies across sectors (e.g., mining, logging) and provinces (e.g., West Papua, North Kalimantan) would further enhance the robustness of the dual-lens valuation model. Ultimately, the integration of geospatial tools, such as participatory mapping and remote sensing, can facilitate a more nuanced analysis of environmental changes and their social implications. Linking ecological degradation data with compensation patterns would offer new pathways for adaptive, evidence-based CSR planning. In summary, while this study highlights the challenges of achieving socially just palm oil development in Papua, it also reveals a hopeful pathway forward. Through inclusive governance, cultural humility, and institutional accountability, companies, communities, and policymakers can co-create sustainable futures rooted in justice, dignity, and shared stewardship.

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Ethics and Consent Statement: The authors affirm that this research was conducted in accordance with the principles of ethical research. Informed consent was obtained from all participants, and strict confidentiality protocols were observed to ensure privacy and integrity.

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