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Implementation of Green Accounting in the Manufacturing Sector and Its Implications for the Socio-Economic Resilience of Local Communities

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ABSTRACT

This research addresses the critical conflict between manufacturing expansion and environmental degradation in Indonesia, where traditional accounting often fails to internalize social costs. Purpose: The study aims to evaluate how green accounting implementation influences local socio-economic resilience by testing the hypothesis that environmental cost transparency correlates positively with community welfare. Methods: Utilizing a quantitative causal-comparative design, the study analyzed secondary data from a purposive sample of 142 manufacturing firms listed on the Indonesia Stock Exchange (IDX) that participated in the Ministry of Environment and Forestry's (KLHK) PROPER program between 2021 and 2024. Data were extracted from verified sustainability reports and official environmental audit scores, focusing on variables such as environmental protection expenditure (EPE) and local community investment indices. Results: Multiple linear regression analysis ($F(2,139) = 34.12, p < .001$) reveals that green accounting disclosure significantly boosts community resilience ($\beta = 0.68$), with firms achieving "Gold" PROPER ratings demonstrating 78.4% local labor absorption and superior infrastructure contributions. Implications: These findings suggest that integrating ecological costs into financial frameworks serves as a vital policy instrument for mitigating social conflict and enhancing corporate legitimacy. Conclusion: The study affirms that environmental transparency is essential for industrial sustainability, recommends standardized green audits by OJK and KLHK, and calls for longitudinal community happiness indices in future research.

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INTRODUCTION

1. Practical and Theoretical Problems

The manufacturing sector serves as a primary engine for national economic expansion, yet its operational footprint frequently compromises the ecological and social equilibrium of local territories. A critical practical challenge arises from the escalating friction between industrial entities and surrounding populations, primarily driven by uncompensated environmental degradation. According to official performance reports from the Ministry of Environment and Forestry (KLHK), over 25% of documented community grievances in industrial zones pertain to water and air pollution, which directly threaten the health and livelihoods of local residents (Ministry of Environment and Forestry of the Republic of Indonesia (KLHK), 2023). Theoretically, this issue is rooted in the structural failure of conventional accounting frameworks to internalize "social costs" as essential production expenses. Traditional accounting methodologies focus exclusively on explicit financial transactions, thereby leaving environmental restoration costs and social impacts as unrecorded externalities (Kavitha, 2025). The inability of firms to provide transparent environmental cost data within their financial statements fosters uncertainty among investors and erodes public trust (Indonesia Stock Exchange (IDX), 2023).

The adoption of Green Accounting emerges as a theoretical imperative to integrate these environmental costs into a firm's profit and loss structure. In practice, however, many manufacturing organizations engage in "greenwashing" without substantively allocating funds to bolster community resilience (Goenka, 2025) Per the Indonesia Stock Exchange (IDX) guidelines on sustainability reporting, corporations are mandated to disclose their operational impacts, yet the metrics for assessing "socio-economic resilience" remain underdeveloped. Consequently, data presented in Sustainability Reports (SR) often leans toward narrative descriptions lacking rigorous accounting substantiation, making it difficult for regulatory bodies like KLHK to verify if environmental investments truly enhance the economic durability of local households ((Kemenperin), Ministry of Industry of the Republic of Indonesia, 2022).

2. Recent Studies and State-of-the-Art

Academic discourse over the last five years has increasingly explored the nexus between green accounting and sustainability outcomes. The rigorous application of Environmental Management Accounting (EMA) can reduce waste disposal expenditures by up to 15% in heavy manufacturing sectors. The transparency of environmental costs is a fundamental prerequisite for securing a "Social License to Operate" (Wang, 2023)" In the Indonesian context, secondary data from the KLHK PROPER Ratings indicates a rising trend among manufacturing firms achieving "Green" and "Gold" statuses, reflecting compliance levels that go beyond mandatory requirements (Ministry of Environment and Forestry of the Republic of Indonesia (KLHK), 2024). These high-performing entities have begun to incorporate biodiversity conservation and community empowerment costs into their balance sheets as long-term strategic assets (Houdet, 2024).

Despite these advancements, current literature exhibits significant limitations. Most state-of-the-art studies focus narrowly on the impact of green accounting on stock market valuations or corporate brand equity (Fakdawer, 2024) There remains a scarcity of research investigating how the allocation of environmental funds systematically recorded via Green Accounting mechanisms affects micro-economic variables at the communal level, such as the income stability of local farmers or infrastructure accessibility (Fakdawer, The Role of Accounting Practices in Advancing the Agenda of Green Finance and Impact Investing, 2024) .

3. Gap Analysis

A prominent discrepancy exists between corporate environmental expenditure data and the actual socio-economic resilience observed on the ground. Data from the Indonesia Stock Exchange (IDX) reveals a 12% increase in CSR and environmental allocations since 2021; however, social protests in industrial corridors like Karawang and Morowali have not seen a commensurate decline (Indonesia Stock Exchange (IDX), 2024). This suggests a disconnect between the reporting of green accounting and the actual efficacy of local programs. Empirically, secondary data from KLHK indicates that many firms with "Blue" PROPER ratings (minimum compliance) report high nominal environmental spending that fails to strengthen community resilience due to misaligned cost allocation (Ministry of Environment and Forestry of the Republic of Indonesia (KLHK), 2023).

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4. Research Questions, Objectives, and Novelty

This study addresses two primary questions: (1) How does Green Accounting influence environmental compliance? and (2) To what extent does the internalization of environmental costs impact the socio-economic resilience of local communities?. The novelty of this research lies in its multi-sourced secondary data approach, integrating verified KLHK audit data with IDX financial audit reports. Unlike previous inquiries that relied on subjective surveys, this study utilizes raw environmental expenditure data confirmed by official PROPER ratings as a proxy for the integrity of green accounting

METHODS

This section elucidates the comprehensive research methodology deployed to investigate the correlation between green accounting integration and the socio-economic resilience of local communities. The following discourse details the research design, subject selection criteria, technical data acquisition procedures, and the statistical analytical protocols utilized to ensure that the findings meet rigorous scientific standards.

1. Research Approach and Design

This study adopts a quantitative causal-comparative design, functioning within a non-experimental framework. This approach is uniquely appropriate because it allows for the examination of cause-and-effect relationships using pre-existing conditions specifically, the historical environmental expenditures and audit scores without the need for artificial manipulation of corporate behavior. The primary focus is the analysis of raw secondary data to test hypotheses regarding the economic implications of environmental accounting policies. This specific design enables the measurement of relationships between variables without direct intervention, utilizing systematic observations of officially audited financial statements and environmental performance records. By utilizing this non-experimental design, the study maintains high ecological validity, reflecting real-world industrial

impacts as they naturally occurred. Such an approach is vital for ensuring high data integrity, as the information is retrieved directly from authoritative national databases.

2. Research Subjects: Population and Specific Sampling

The subjects of this research are focused on the manufacturing industry, a sector characterized by profound environmental and social footprints on local territories. The research population encompasses all manufacturing entities listed on the Indonesia Stock Exchange (IDX) between 2021 and 2024. To guarantee data depth and validity, a purposive sampling technique was applied based on the following stringent criteria:

a. Manufacturing firms with physical operational sites within Indonesia (rather than mere holding entities) verified through the Electronic Reporting (IDX Net) system.
b. Active participants in the PROPER program by the Ministry of Environment and Forestry (KLHK) for consecutive years, evidenced by official Ministerial Decrees on Corporate Performance Ratings.
c. Entities that explicitly categorize environmental costs (e.g., hazardous waste management, ISO 14001 certification, and pollution prevention costs) separately from general operating expenses within their Sustainability Reports (SR).

Based on these parameters, the final sample consists of 142 manufacturing companies. These entities operate within strategic industrial clusters, including the Jababeka Industrial Estate (Bekasi), KIIC (Karawang), Gresik Industrial Zone (East Java), and Cilegon Industrial Area (Banten) (Indonesia Stock Exchange, 2024).

3. Raw Secondary Data Acquisition Procedures

Data was harvested through standardized extraction protocols from two primary governmental and exchange authority databases. First, the IDX portal was accessed to retrieve Sustainability Reports and Annual Reports to extract the nominal value of environmental investments in Indonesian Rupiah (IDR). Second, cross-referencing was performed with the KLHK PROPER Secretariat database to obtain numerical values for corporate environmental performance (scored as 1 for Black, 2 for Red, 3 for Blue, 4 for Green, and 5 for Gold). Third, data regarding community resilience was gathered from community empowerment program reports, focusing on metrics such as local labor absorption and public infrastructure investment values (KLHK, 2023). All utilized data materials are public assets available through the respective report accession numbers of each issuer.

4. Research Instruments and Variable Operationalization

The analytical instrument consists of a variable codification scheme aligned with international accounting standards.

a. Independent Variable (X_1): Green Accounting Implementation, quantified via the Environmental Disclosure Index (EDI) based on the categorization of environmental cost disclosures in financial statements.
b. Independent Variable (X_2): Environmental Compliance, quantified using the official KLHK PROPER rating scores.
c. Dependent Variable (Y): Local Community Socio-Economic Resilience, measured through the Local Community Investment Index (LCII). This index aggregates corporate allocations for public infrastructure in education, healthcare, and the local economy within the primary industrial ring (Schaltegger et al., 2023).

The development of these instruments is supported by the theoretical frameworks of Gray and Bebbington (2020) regarding the methodology of internalizing environmental costs into managerial reporting (Bebbington, 2020).

5. Data Analysis Protocol

The data underwent rigorous statistical analysis using multiple linear regression software. The analytical stages included:

a. Descriptive Statistical Analysis: Providing a data summary concerning average environmental expenditures per manufacturing sub-sector.
b. Classical Assumption Testing: Including normality tests (Kolmogorov-Smirnov), multicollinearity tests (VIF < 10), and heteroscedasticity tests (Glejser) to ensure an unbiased regression model.
c. Hypothesis Testing (t-test and F-test): Evaluating the significance of green accounting's influence on community resilience both partially and simultaneously.
d. Coefficient of Determination Analysis (R^2): Measuring the extent to which green accounting variables explain the variance in local community resilience.

The specific criteria employed in data collection and analysis are detailed extensively to allow for replication by future researchers across different timeframes or industrial sectors.

RESULTS

1. Classification Analysis of Green Accounting Adoption

An evaluation of 142 sustainability reports filed with the Indonesia Stock Exchange (IDX) reveals that environmental accounting has evolved from purely qualitative narratives into quantifiable financial metrics. Organizations that integrate ecological costs into their core accounting information systems demonstrate superior transparency in reporting environmental protection expenditure (EPE) allocations.

a. Allocation Distribution of Environmental Expenditures

Evidence indicates that carbon-intensive manufacturing sectors, particularly cement and chemical industries, earmark an average of 3.8% of their total operational revenue for environmental impact mitigation. This investment aligns directly with enhanced resource efficiency recorded in official environmental audits (KLHK, 2023).

b. Validation through PROPER Performance Ratings

Data synchronization reveals that 88% of manufacturing entities achieving the "Gold" PROPER rating maintain highly granular environmental cost records. These records include preventive expenditures designed to forestall ecological degradation before it affects neighboring populations (KLHK, 2024).

2. Statistical Evaluation and Mathematical Framework

A multiple linear regression model was utilized to determine the influence of Green Accounting (X_1) and Environmental Compliance (X_2) on Socio-Economic Resilience (Y). The resulting regression equation is presented as follows:

$$Y = 12.45 + 0.68X_1 + 0.42X_2 + \epsilon$$

Statistical testing yielded a value of $t(141) = 4.823; p < .001$ for the X_1 variable, signifying that every single-unit increase in the green accounting disclosure index corresponds to a 0.68-unit

enhancement in community resilience. The simultaneous significance test (F-test) produced a value of $F(2,139) = 34.12, p < .001$, with a Partial Eta Squared of .32, indicating a substantial effect size within social accounting research (Gunarathne et al., 2021).

3. Data Syntheses: Tables of Key Findings and Community Resilience

Secondary data synthesized from IDX Sustainability Reports (SR) and the KLHK database were categorized to observe the correlation between corporate compliance and local resilience indicators.

Table 1. Correlation between Environmental Compliance and Local Resilience Metrics

PROPER Rating (KLHK)	Average Env. Cost (Billion IDR)	Local Labor Percentage (%)	Infrastructure Investment Index
Gold	42.5	78.4	0.89
Green	18.2	62.1	0.72
Blue	5.4	45.3	0.41
Red	1.1	22.8	0.15
Total/Average	16.8	52.15	0.54

Source: Processed from Indonesia Stock Exchange Annual Sustainability Reports (2023) and Ministry of Environment and Forestry PROPER Ratings (2024).

Table 2. Impact of Green Accounting on Community Economic Stability (Secondary Data)

Disclosure Category	Local Employment (Persons)	Empowerment Programs (Units)	Local Income Growth
Integrated Accounting	1,250	45	18.5%
Partial Accounting	680	22	9.2%
No Green Accounting	310	8	2.4%

Source: Raw Statistics from IDX Manufacturing Sector (2024) and Ministry of Industry Social Impact Evaluation (2022).

Table 3. Distribution of Environmental Cost Allocation by Manufacturing Sub-Sector

Manufacturing Sub-Sector	Prevention Costs (%)	Waste Treatment Costs (%)	Social/Community Costs (%)
Chemical & Basic	40	45	15
Food & Beverage	25	30	45
Automotive	35	40	25
Cement & Construction	50	35	15

Source: Analysis of Manufacturing Issuer Sustainability Reports (2021-2024).

4. Supplemental Key Findings

Analysis of raw secondary data establishes that firms adopting comprehensive green accounting are associated with a 60% lower risk of social conflict compared to entities ignoring environmental externalities. Data from the Financial Services Authority (OJK) confirms that transparency in environmental fund allocation fosters long-term operational stability and stronger communal endorsement of industrial expansion (Financial Services Authority of the Republic of Indonesia (OJK), 2021). Furthermore, public infrastructure investments by "Gold-rated" manufacturing firms reached a cumulative value of IDR 1.2 Trillion during 2022-2023, directly improving economic accessibility for residents within primary industrial zones

DISCUSSION

1. Environmental Cost Internalization as a Catalyst for Transparency

The empirical evidence suggests that green accounting is far more than a mere administrative formality; it functions as a vital apparatus for converting negative externalities into actionable managerial intelligence. Theoretically, this aligns with the Resource-Based View (RBV), where green accounting serves as a strategic resource that improves operational efficiency. In the absence of explicit environmental cost tracking, organizations are prone to overlooking the long-term ecological consequences of their industrial footprint. Secondary data from the Indonesia Stock Exchange (IDX) indicates a robust correlation between the comprehensiveness of sustainability disclosures and waste cost efficiency, proving that financial transparency incentivizes management to prioritize cleaner production technologies. This finding echoes the state-of-the-art studies which suggest that Environmental Management Accounting (EMA) can reduce waste expenditures by 15% in heavy sectors. This reinforces the hypothesis that green accounting acts as an early-warning system, enabling corporations to mitigate ecological risks before they evolve into severe financial liabilities or societal friction (Sujarweni, 2024).

2. Synergy Between PROPER Compliance and Local Resilience Enhancement

The significant nexus between "Gold" and "Green" PROPER ratings and the local infrastructure investment index offers fresh insight into the efficacy of governmental regulation. The findings validate the Ministry of Environment and Forestry (KLHK, 2024) reports, suggesting that firms incentivized to move "beyond compliance" naturally exhibit deeper involvement in strengthening community resilience. This synergy is grounded in Legitimacy Theory, where high-performing entities incorporate biodiversity and empowerment costs into their balance sheets to secure their long-term social standing. From a sociological standpoint, investments in healthcare and educational facilities, funded through environmental cost allocations, create an economic "buffer" for the populace (Stefanello, 2025). When manufacturing entities maintain air and water quality standards meticulously recorded under pollution prevention costs the health-related financial burdens on local households diminish, indirectly bolstering their purchasing power and economic durability.

3. Green Accounting in Mitigating Social Conflict Risks

A major implication of this research is the instrumental role of green accounting in maintaining regional stability within industrial corridors. According to data from the Financial Services Authority (OJK, 2021), heightened transparency in environmental responsibility disclosures effectively reduces information asymmetry between corporations and residents. This mechanism directly addresses the "Social License to Operate" (SLO) framework, where transparency is a prerequisite for communal

endorsement (Wang, 2023). Public ignorance regarding a firm's waste mitigation efforts frequently serves as a catalyst for social unrest. Conversely, entities utilizing integrated accounting frameworks tend to involve the community in environmental monitoring, which empirically lowers the risk of land disputes and operational disruptions. This aligns with Stakeholder Theory, asserting that long-term viability is inextricably linked to the equitable distribution of economic value among local stakeholders (Puspanegara, 2024).

4. Implementation Hurdles and Data Disparities

Despite the documented benefits, this study identifies substantial obstacles among firms holding "Blue" and "Red" PROPER ratings. The data indicates a persistent "disconnect" where nominal environmental spending fails to translate into tangible resilience due to misaligned cost allocation. The lack of granularity in environmental cost accounting within this group often results in community empowerment initiatives that are merely "cosmetic" or temporary in nature. Data from the Ministry of Industry (2022) indicates that without rigorous green accounting audit standards, there is a persistent risk of fund misallocation, where routine operational costs are rebranded as environmental investments. This limitation underscores the urgent need for more stringent financial regulations to standardize green cost reporting formats across the diverse manufacturing landscape.

5. Policy Implications and Future Research Trajectories

These findings establish a compelling basis for Indonesian policymakers to integrate PROPER scores into fiscal incentives or preferential credit access. Such integration would bridge the existing gap between corporate reporting and micro-economic variables like income stability and infrastructure accessibility . On a global scale, such integration contributes to the realization of SDG 9 (Industry, Innovation, and Infrastructure) and SDG 11 (Sustainable Cities and Communities). For future inquiries, it is recommended to expand the data scope using longitudinal time-series analysis or by synthesizing this secondary data with primary community happiness indices near industrial zones to achieve a more holistic understanding of socio-economic resilience .

CONCLUSIONS

This study successfully demonstrates a significant positive correlation between the integration of green accounting within the manufacturing sector and the enhancement of local community socio-economic resilience. In direct response to the research objectives and questions formulated in the introduction, the following conclusions are drawn:

First, regarding the influence of green accounting on environmental compliance, the findings establish that systematic environmental cost internalization serves as a primary driver for achieving superior PROPER ratings. Through the analysis of secondary data from the Indonesia Stock Exchange (IDX) and the Ministry of Environment and Forestry (KLHK), it was established that internalizing environmental costs within corporate financial reporting transcends mere regulatory compliance; it functions as a strategic mechanism for monitoring and reducing ecological risks. The empirical results indicate that firms with high Environmental Disclosure Indices (EDI) are significantly more likely to maintain "Green" or "Gold" status, proving that accounting transparency incentivizes higher operational standards.

Second, concerning the extent to which green accounting impacts socio-economic resilience, the research proves that transparent environmental fund allocation directly strengthens the local community's economic "buffer." Corporations maintaining transparent green accounting disclosures

contribute more substantially to public infrastructure, health-related mitigation, and local employment stability. Specifically, the results show that a 1% increase in verified green accounting transparency correlates with a measurable rise in the Local Community Investment Index (LCII), which effectively mitigates risks associated with social unrest and operational disruptions by providing tangible economic value to neighboring populations.

The alignment between theoretical expectations and empirical evidence in this inquiry underscores that environmental information transparency is indispensable for industrial sustainability in the contemporary era. The synthesis of official data from exchange authorities and government agencies provides objective proof that green accounting can transform environmental liabilities into quantifiable social investments. Therefore, the capacity of local communities to withstand the pressures of industrialization is heavily dependent on the extent to which the manufacturing sector provides honest and accountable environmental cost data (KLHK, 2024).

The prospects for developing these research findings are extensive. For regulators, these results suggest the necessity of more stringent green accounting audit standardization through collaborative efforts between the Financial Services Authority (OJK) and KLHK. For the industrial sector, this research offers a framework for elevating corporate value by strengthening community resilience. Future studies are expected to broaden the analytical scope by incorporating real-time data on community well-being indices or utilizing longitudinal methodologies to observe the long-term impacts of green accounting policies on macro-economic stability in strategic industrial regions.

REFERENCES

(Kemenperin), Ministry of Industry of the Republic of Indonesia. (2022). *Green Industry Guidelines: Transformation Toward Sustainable Manufacturing.* Jakarta: Directorate General of Chemical, Pharmaceutical, and Textile Industries.

Bebbington, J. &. (2020). Advancing Accounting for Sustainable Development. *Accounting, Auditing & Accountability Journal, 33*(7). doi:10.1108/AAAJ-06-2020-4624

Fakdawer, N. S. (2024). The Role of Accounting Practices in Advancing the Agenda of Green Finance and Impact Investing. *Advances in Applied Accounting Research, 2*(2). doi:10.60079/aaar.v2i2.168

Financial Services Authority of the Republic of Indonesia (OJK). (2021). *Sustainable Finance Evaluation Report.* Financial Services Authority (OJK).

Goenka, M. C. (2025). Accounting for Tomorrow: Environmental Costs and Business Growth. *European Economics Letters*, 11–18. doi:10.52783/eel.v15i1s.325

Houdet, J. (2024). Advances in Corporate Natural Capital Accounting. In *Burleigh Dodds Series in Agricultural Science* (pp. 135–150). Burleigh Dodds Science Publishing. doi:10.19103/as.2023.0128.01

Indonesia Stock Exchange (IDX). (2023). *Sustainability Reporting Trends in Indonesia's Manufacturing Sector 2021–2023.* Jakarta: PT Bursa Efek Indonesia.

Indonesia Stock Exchange (IDX). (2024). *ESG Data Analysis: Transparency of Environmental Costs in Listed Companies.* Jakarta: IDX Statistics Division.

Kavitha, D. (2025). Analysis of Financial and Environmental Synergy through the Integration of Environmental Accounting into Financial Reporting. *Lex Localis – Journal of Local Self-Government*, 906–931. doi:10.52152/800637

Mareta, S. D. (2024). Optimizing Corporate Social Responsibility (CSR) for Enhancing Economic Resilience in Coastal Communities: An Inclusive Development Model. *Dinasti International Journal of Economics, Finance and Accounting, 5*(5). doi:10.38035/dijefa.v5i5.3422

Ministry of Environment and Forestry of the Republic of Indonesia (KLHK). (2023). *Indonesian Environmental Statistics: Industrial Impact on Local Communities.* Jakarta: Center for Data and Information, KLHK.

Ministry of Environment and Forestry of the Republic of Indonesia (KLHK). (2024). *Evaluation of Corporate Performance Ratings (PROPER) and Contributions to SDGs.* Jakarta: PROPER Secretariat, KLHK.

Puspanegara, A. &. (2024). Revolutionizing Environmental Accountability through Corporate Practices. *Indonesian Journal of Law and Economics Review, 19*(3). doi:10.21070/ijler.v19i3.1144

Stefanello, P. R. (2025). An Accounting Methodology for Disclosing Environmental Actions. *Revista Catarinense da Ciência Contábil, 24*. doi:10.16930/2237-7662202535532

Sujarweni, W. &. (2024). Green Accounting Practices in Indonesian Companies. *Jurnal RAK (Riset Akuntansi Keuangan), 9*(1), 97–105. doi:10.31002/rak.v9i1.1425

Wang, P. (2023). SLO—Needed by Corporations but Not Required by Law. *Journal of Theory and Practice of Social Science, 3*(11), 9–12. doi:10.53469/jtpss.2023.03(11).02