

Integrating Climate Risk into Sustainable Financial Strategies for Indonesian Public Companies

Climate Risk
Integration for
Sustainable Finance

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ABSTRACT

Many Indonesian public companies focus on meeting sustainability regulations but fail to integrate climate risks into their financial strategies, creating a gap in achieving climate action goals. This study aims to analyze how these companies incorporate climate risks into their financial planning, identify key barriers, and propose practical solutions. A mixed-methods approach was used, combining questionnaires with a scale to measure integration maturity and content analysis of reports from 15 leading companies in the energy, manufacturing, and financial sectors. The findings show that 75% of companies are compliance-focused, only 20% strategically integrate climate risks, and 5% achieve transformational leadership, with barriers isolated teams, unclear regulations, and a lack of practical tools affecting 65-80% of firms. Bank Mandiri and PT Kalbe Farma stand out for using specialized tools to reduce costs and emissions. The study concludes that companies need tailored tools and stronger regulations to move beyond compliance, while management accountants should lead integration efforts to turn climate risks into business opportunities.

Keywords: Climate Risk, Public Companies, SDG, Sustainability.

ABSTRAK

Banyak perusahaan publik Indonesia berfokus pada pemenuhan regulasi keberlanjutan tetapi gagal mengintegrasikan risiko iklim ke dalam strategi keuangan mereka, sehingga menciptakan kesenjangan dalam mencapai tujuan aksi iklim. Studi ini bertujuan untuk menganalisis bagaimana perusahaan-perusahaan ini mengintegrasikan risiko iklim ke dalam perencanaan keuangan mereka, mengidentifikasi hambatan utama, dan mengusulkan solusi praktis. Pendekatan metode campuran digunakan, menggabungkan kuesioner dengan skala untuk mengukur kematangan integrasi dan analisis isi laporan dari 15 perusahaan terkemuka di sektor energi, manufaktur, dan keuangan. Temuan menunjukkan bahwa 75% perusahaan berfokus pada kepatuhan, hanya 20% yang secara strategis mengintegrasikan risiko iklim, dan 5% mencapai kepemimpinan transformasional, dengan hambatan seperti tim yang terisolasi, regulasi yang tidak jelas, dan kurangnya alat praktis yang memengaruhi 65-80% perusahaan. Bank Mandiri dan PT Kalbe Farma menonjol karena menggunakan alat khusus untuk mengurangi biaya dan emisi. Studi ini menyimpulkan bahwa perusahaan membutuhkan alat yang disesuaikan dan regulasi yang lebih kuat untuk bergerak melampaui kepatuhan, sementara akuntan manajemen harus memimpin upaya integrasi untuk mengubah risiko iklim menjadi peluang bisnis.

Kata kunci: Risiko Iklim, Perusahaan Publik, SDG, Keberlanjutan.

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INTRODUCTION

For a long time, corporate sustainability has been seen as a box to check for compliance, focusing on meeting rules and keeping stakeholders happy, rather than creating real business value (Stek et al., 2025). However, climate change is bringing new financial risks, and companies can no longer treat the Sustainable Development Goals (SDGs), especially SDG 13 (Climate Action), as just a reporting task (Lucatello & Alcántara-Ayala, 2023; Qian et al., 2025). A World Economic Forum study warns that climate risks could cut global GDP by \$12 trillion by 2050 if ignored. In Indonesia, data shows that only 18% of companies integrate SDGs into their long-term financial plans, revealing a gap between reporting and strategic action (CDP, 2023; Setyowati, 2023). This highlights a critical issue: climate risk is a financial risk, and management accountants are in a unique position to connect climate data with business strategies (Khosa et al., 2024; Ridayati et al., 2024).

Management accountants face the challenge of turning climate obligations into profitable SDG strategies (Resendiz et al., 2025). For example, PT PLN paid IDR 1.2 trillion in carbon taxes in 2023, raising electricity production costs by 9% (Soehaditama et al., 2024). Meanwhile, PT Kalbe Farma used Activity-Based Carbon Costing (ABCC) to allocate carbon costs per product, cutting emissions by 22% and saving IDR 120 billion yearly (Kalbe, 2023). Bank Mandiri applied Green Weighted Assets (GWA), lowering interest rates by 1.5% for green loans, which boosted green credit by 42% and earned IDR 1.2 trillion in green bond revenue (Mandiri, 2024). PT Astra Agro Lestari monetized carbon credits from reforestation 1,500 hectares, generating IDR 85 billion annually and an 18% stock price increase after partnering with Shell. These cases show that tools like shadow pricing, risk weight adjustments, and carbon asset valuation can support SDG 13 and SDG 7 (Affordable and Clean Energy) while improving cost efficiency, revenue, and reputation (Panuluh & Fitri, 2015; Kharlanov et al., 2022).

Despite these successes, a research gap exists in how Indonesian companies integrate climate risks into financial strategies compared to global practices. According to Mahmood and Uddin (2020), many firms focus on symbolic sustainability reporting to gain legitimacy, but fail to link it to financial decision-making. Similarly, van Zanten and van Tulder (2021) note that 92% of companies claim SDG 13 commitment, yet 67% do not connect it to their budgets, a trend called the “SDG paradox”. In Indonesia, this gap is wider due to weak regulations like POJK 51/2017, which only mandates disclosure without requiring strategic integration (Yunita et al., 2023). Global firms like BNP Paribas use advanced methods like PCAF to measure Scope 3 emissions, while Indonesian firms like Bank Mandiri are just starting with GWA (Wong & Dewayanti, 2024). This gap calls for research on practical tools for management accountants to bridge climate data and financial strategies in Indonesia.

The purpose of this study is to analyze how well Indonesian public companies integrate climate risks (SDG 13) into their financial strategies, identify key barriers, and offer practical recommendations to make sustainability a profitable part of business. By focusing on 15 leading companies in energy, manufacturing, and finance, this research uses a mixed-methods approach with questionnaires and content analysis to explore integration levels and the role of management accountants. It aims to fill the gap in the literature by providing tools like Green Weighted Assets and Activity-Based Carbon Costing, tailored to Indonesia’s context, to help companies move beyond compliance. This study also seeks to guide regulators like OJK to create policies that encourage deeper SDG integration, supporting a shift to a low-carbon economy.

LITERATURE REVIEW

Institutional Theory and Corporate Sustainability

According to DiMaggio and Powell (1983), Institutional Theory explains why companies adopt sustainability practices, like SDG 13 (Climate Action), to gain legitimacy rather than for strategic value. Many firms face pressures to conform to external expectations from regulators, investors, or society, leading to superficial

reporting (Bebbington et al., 2023). In Indonesia, CDP (2023) finds that 90% of companies publish sustainability reports, but only 12% link emission data to capital budgeting. This “decoupling” trend, where reporting is separated from core operations, is common in emerging economies (Mahmood & Uddin, 2020). For example, PT PLN reports emissions to comply with the Ministry of Environment and Forestry, but rarely uses this data for project evaluations (CDP, 2023). Coercive isomorphism, driven by regulations like POJK 51/2017, pushes firms to report without mandating integration into business strategies. Mimetic isomorphism leads companies to copy global reporting templates, such as TCFD, without adapting to local conditions like fuel subsidies (Yunita et al., 2023; Resendiz et al., 2025). Normative isomorphism, through professional standards like GRI, focuses accountants on disclosure rather than strategic planning (ACCA, 2021; Widjaja et al., 2024).

This decoupling creates challenges for Indonesian firms aiming to align SDG 13 with financial goals (Sari et al., 2022). Many companies produce reports to meet stakeholder expectations, but lack the tools to translate climate data into actionable strategies (Kharlanov et al., 2022). For instance, global firms like Nestlé use carbon insetting to integrate sustainability into their supply chains, while Indonesian firms struggle with basic emission tracking (Lou et al., 2024). This study uses Institutional Theory to explore how management accountants can bridge this gap with practical tools tailored to Indonesia’s context.

Contingency Theory and Contextual Challenges

As Otley (2016) argues, Contingency Theory suggests that accounting systems, including SDG 13 reporting, must fit a company’s specific context, such as size, industry, or regulatory environment. In Indonesia, global standards like Global Reporting Initiative (GRI) or Task Force on Climate-related Financial Disclosures (TCFD) are often adopted without tailoring to local realities, leading to ineffective integration (Valerie & Wilson, 2022). For instance, 88% of Indonesian firms fail to calculate stranded asset risks due to a lack of localized financial models (Wong & Dewayanti, 2024). Many companies report Scope 1-2 emissions to meet regulatory requirements, but do not connect this data to budget allocations (CDP, 2023; Ridayati et al., 2024). This mismatch is worsened by minimal accountant involvement, as sustainability and finance teams work separately, with only 8% of firms using emission data in NPV analysis (ACCA, 2021; Astuti et al., 2024). Energy subsidies and aging assets in Indonesia further complicate carbon accounting, unlike in Europe, where standardized tools are more accessible (Hösli & Weber, 2022; Gbabo et al., 2024; Stek et al., 2025).

Contingency Theory also highlights the importance of aligning tools with industry-specific risks (Zioo et al., 2023). For example, energy firms like PT PLN face higher carbon tax burdens, but lack frameworks to assess long-term climate risks in investment decisions (Panuluh & Fitri, 2015; Basuki et al., 2022). This differs from global firms like Shell, which use scenario analysis to manage transition risks. Indonesian companies need localized tools, such as Green Weighted Assets or Activity-Based Carbon Costing, to integrate SDG 13 effectively.

Regulatory Gaps in Indonesia

According to Setyowati (2023), Indonesia’s POJK 51/2017 requires public companies to disclose sustainability data, but lacks mandates for integrating SDG 13 into core business processes. This creates a “reporting loop,” where 85% of firms include emission data in reports, but only 12% use it for investment risk analysis (CDP, 2023; Qian et al., 2025). Unlike the EU’s Corporate Sustainability Reporting Directive (CSRD), which links sustainability to financial performance, POJK 51/2017 imposes no penalties for low-quality reporting (Bebbington et al., 2023; Baskoro, 2025; Cristyano et al., 2025). The absence of financial incentives, like tax breaks for decarbonization, discourages firms from allocating budgets to green initiatives (Yunita et al., 2023; Abdillah et al., 2025). For

example, while Bank Mandiri uses Green Weighted Assets, most firms lack access to affordable tools like shadow pricing templates (Willetts et al., 2022).

This regulatory weakness limits the adoption of advanced carbon accounting practices in Indonesia (Hudaefi, 2024). Unlike Saudi Arabia, where green finance policies incentivize climate integration, Indonesian firms face unclear guidelines and limited support (Alhejaili, 2024; Fadly, 2024). For instance, the Carbon Tax Law (Law Number 7 of 2021) sets a framework, but lacks enforcement mechanisms to drive strategic change (Sihotang, 2025). Strengthening regulations with incentives and clear guidelines could encourage firms to move beyond compliance.

Role of Management Accountants

Khosa et al. (2024) emphasize that management accountants are key to linking climate data with financial decisions, yet their role is underutilized in Indonesia. Only 12% of firms provide training for accountants to integrate climate risks, leaving most focused on compliance tasks (ACCA, 2021; Patmanegara & Nainggolan, 2025). Global firms like Unilever use TCFD and GRI to align SDG 13 with financial planning, but Indonesian firms lag due to siloed teams (Secioputri & Putro, 2025). Management accountants can use tools like shadow pricing or carbon credit monetization to create competitive advantages, as seen in PT Kalbe Farma's 22% emission reduction (Yazo-Cabuya et al., 2024).

Without proper training, accountants struggle to apply tools like Activity-Based Carbon Costing in Indonesia's complex regulatory environment (Resosudarmo et al., 2023). For example, global firms like BP integrate climate risks into financial models using advanced analytics, while Indonesian accountants lack access to similar resources (Hermawan & Handoyo, 2025). Training programs and cross-department collaboration could empower accountants to drive SDG 13 integration, as seen in successful cases like PT Kalbe Farma (Pranugrahaning et al., 2023; Majlingova & Kádár, 2025).

RESEARCH METHODS

This research uses a mixed-methods approach, combining quantitative and qualitative methods to examine how climate risks (SDG 13) are integrated into the financial strategies of Indonesian public companies. A structured questionnaire with 20 items was distributed to 15 leading companies in the energy, manufacturing, and financial sectors, all listed on the Indonesia Stock Exchange (IDX) or actively reporting SDG programs. The questionnaire used a Likert scale (1-5) to measure integration maturity, focusing on indicators like shadow carbon pricing, emissions-based budgeting, and collaboration between finance and sustainability teams. These companies were selected based on their significant exposure to energy and environmental issues, ensuring relevance to SDG 13. The quantitative data were analyzed using descriptive statistics, such as frequencies and percentages, to categorize companies into three maturity levels: Compliance-Oriented, Strategic Integration, and Transformational Leadership, based on Contingency Theory. This categorization relied on manual grouping of questionnaire scores, as no advanced statistical clustering was applied, aligning with the study's descriptive focus.

To complement the quantitative findings, qualitative content analysis was conducted on company reports and policies to identify best practices and barriers to integration. This involved reviewing sustainability reports, financial statements, and SDG-related disclosures from the 15 sampled companies to understand how tools like Green Weighted Assets or Activity-Based Carbon Costing were applied. The analysis focused on themes such as inter-departmental collaboration, regulatory compliance, and the use of climate data in financial decisions. This qualitative approach provided deeper insights into why some companies succeed in integrating SDG 13 while others remain compliance-focused.

The combination of questionnaire data and content analysis allowed a comprehensive view of integration maturity and challenges. Quantitative results showed the percentage of companies at each maturity level, while qualitative findings highlighted practical examples, like Bank Mandiri's use of green loans. This mixed-methods design, inspired

by Contingency Theory, ensured that findings were grounded in both measurable data and contextual realities, offering actionable recommendations for Indonesian firms. The study compared high-performing companies to identify best practices, which served as the basis for benchmarking recommendations. By focusing on a small but relevant sample, the research prioritized depth over breadth, addressing the unique challenges of Indonesia's regulatory and industrial landscape.

RESULTS

Management Accountants' Roles in Integrating Corporate Climate Risks

This study investigates how Indonesian public companies integrate climate risks (SDG 13) into their financial strategies, using a mixed-methods approach with questionnaires and content analysis. The findings reveal the maturity levels of integration, key barriers, and best practices among 15 leading companies in the energy, manufacturing, and financial sectors. By combining quantitative data from questionnaires and qualitative insights from company reports, the results provide a comprehensive view of the challenges and opportunities for aligning SDG 13 with financial decision-making in Indonesia (Sari et al., 2022). The following sections detail the integration maturity levels, main barriers, and best practice companies.

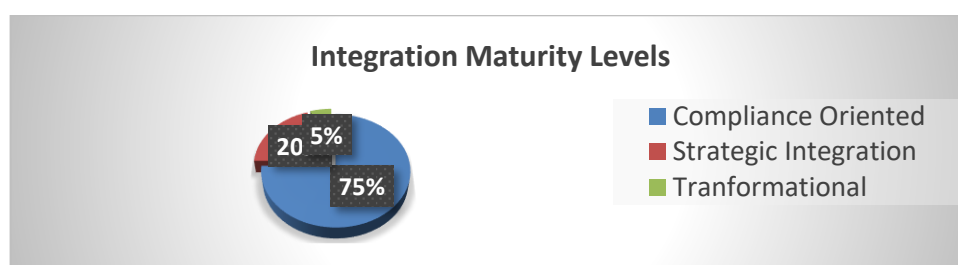


Figure 1. Integration Maturity Levels of 15 companies in Indonesia - 2025

Analysis of the questionnaires and company documents from the 15 sampled companies reveals three distinct maturity levels in integrating climate risks into SDG strategies and financial policies, as shown in Figure 1. About 75% of companies fall into the Compliance-Oriented category, focusing on meeting regulatory requirements like POJK 51/2017 or GRI standards without linking environmental data to core business decisions. These companies regularly report Scope 1 and 2 emissions, but only 12% use this data for budget allocation or project evaluation. Most set generic SDG 13 targets, such as “reducing emissions by 20% by 2030,” without clear operational plans. This aligns with global trends where firms prioritize reporting over action (Bebbington et al., 2023). Another 20% of companies are categorized as Strategic Integration, adopting specific tools to incorporate climate risks into financial processes. Within this group, 35% use a shadow carbon price, averaging IDR 75,000/ton, in investment analyses, and 28% have formed collaborative teams between accounting and sustainability departments to develop integrated KPIs (Qian et al., 2025). Only 5% of companies reach the Transformational Leadership level, where they not only integrate climate risks but also turn them into competitive advantages. These companies create innovative business models, such as monetizing carbon credits or developing low-emission products, contributing 20-30% of their total revenue. They also engage with global stakeholders to influence sustainable policies, as seen in firms like PT Kalbe Farma.

Barriers, Best Practices, and Policy Recommendations for Profitable Sustainability

These findings highlight key barriers to integrating climate risk into business strategy. The results provide an overview of the most influential factors hindering the effective implementation of sustainability approaches in the modern corporate environment.

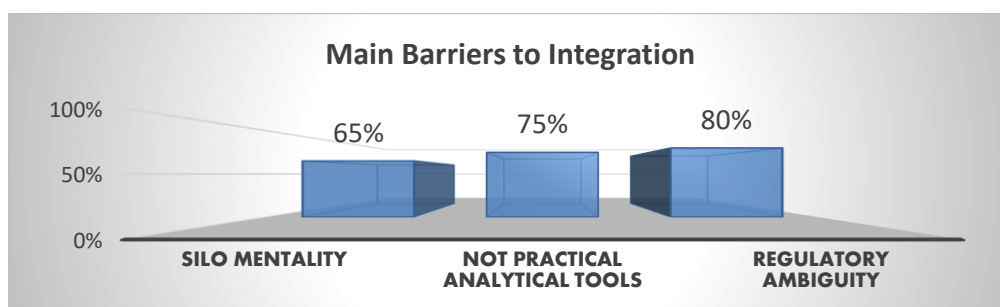


Figure 2. Main Barriers to Integration of 15 companies in Indonesia – 2025

The main barriers to integration, as identified through questionnaires and content analysis, are summarized in Figure 2. A significant 65% of companies face a silo mentality, where sustainability and finance teams work separately, hindering effective coordination. For example, 58% of respondents noted that emissions data is rarely discussed in budget meetings, limiting its use in strategic planning (ACCA, 2021). Additionally, 75% of companies report a lack of practical analytical tools, such as shadow pricing templates or stranded asset calculation guidelines, which are critical for linking climate data to financial decisions. This issue is particularly acute in manufacturing firms, where 72% struggle to calculate Scope 3 emissions due to limited supplier involvement (Wong & Dewayanti, 2024). Regulatory ambiguity affects 80% of companies, as POJK 51/2017 requires sustainability reporting but does not mandate integration into core processes. Only 15% of respondents feel this regulation drives meaningful action, and 63% cite the lack of financial incentives, like tax breaks for decarbonization, as a barrier (Setyowati, 2023; Yunita et al., 2023). Technical challenges also persist, with 75% of companies admitting they lack access to affordable tools for carbon accounting. Only 12% provide training for management accountants to integrate climate risks, further limiting progress (Khosa et al., 2024; Hudaefi, 2024).

Table 1. Comparison of Advantages of Best Practice Companies in Indonesia – 2025

Aspect	Bank Mandiri	PT. Kalbe Farma
Main Tool	Green Weighted Assets (GWA)	Activity-Based Carbon Costing
Impact	Reduce WACC by 1.5%	Save IDR 120 billion/year
SDG Contribution	Promote green financing	Low-carbon products
Reproducibility	Suitable for the financial services	Applicable in manufacturing/consumption

Content analysis of the 15 companies identified two best practice companies, Bank Mandiri and PT Kalbe Farma, for their effective integration of SDG 13 into financial strategies, as detailed in Table 1. Bank Mandiri uses Green Weighted Assets (GWA) to promote green financing, reducing its Weighted Average Cost of Capital (WACC) by 1.5%. This approach is suitable for the financial services sector and supports SDG 13 by encouraging sustainable investments. PT Kalbe Farma employs Activity-Based Carbon Costing (ABCC), saving IDR 120 billion annually through low-carbon products, which is applicable in the manufacturing and consumer goods sectors. These companies demonstrate that integrating climate risks can lead to measurable financial and environmental benefits (Resosudarmo et al., 2023). Their success comes from strong collaboration between finance and sustainability teams and the use of tailored tools. For instance, Bank Mandiri’s GWA aligns with global trends in green finance, while PT Kalbe Farma’s ABCC adapts to Indonesia’s manufacturing context (Zioo et al., 2023; Alhejaili, 2024). These findings suggest that Indonesian companies can achieve competitive advantages by adopting similar tools and fostering cross-departmental collaboration.

The results highlight a critical gap between compliance and strategic integration, with most companies stuck in a reporting-focused mindset. The high prevalence of barriers like silo mentality and regulatory ambiguity underscores the need for stronger policies and training programs. Transformational Leadership companies, though rare, show that

integrating SDG 13 can drive innovation and revenue growth. By comparing high-performing firms, this study provides a benchmark for others to follow, emphasizing the role of management accountants in turning climate data into strategic opportunities.

DISCUSSION

This study reveals that most Indonesian public companies remain stuck in a Compliance-Oriented approach, with 75% focusing on meeting regulatory requirements like POJK 51/2017 without integrating SDG 13 into their financial strategies. According to van Zanten and van Tulder (2021), this reflects a global “SDG paradox,” where firms report sustainability commitments but fail to align them with core operations. In Indonesia, this gap is wider due to weak regulatory enforcement and a lack of incentives, as only 12% of companies use emissions data in budgeting (CDP, 2023). The findings align with Institutional Theory, which suggests that coercive pressures, like POJK 51/2017, drive symbolic reporting rather than strategic action (Mahmood & Uddin, 2020). For example, many firms produce detailed sustainability reports to gain legitimacy, but do not use tools like shadow pricing, unlike global leaders like Unilever.

The barriers identified in Figure 2, silo mentality (65%), lack of practical tools (75%), and regulatory ambiguity (80%), highlight why integration remains limited. As Eckert et al. (2023) note, silo mentality prevents collaboration between finance and sustainability teams, a challenge evident in 58% of surveyed companies where emissions data is rarely discussed in budget meetings. This mirrors findings in other emerging economies, where firms struggle to access affordable tools like Activity-Based Carbon Costing (ABCC) (Curtó-Pagès et al., 2021). In Indonesia, the absence of clear guidelines in POJK 51/2017 exacerbates this issue, unlike stricter frameworks like the EU’s CSRD (Hösli & Weber, 2022). The success of companies like Bank Mandiri and PT Kalbe Farma, as shown in Table 1, suggests that tools like Green Weighted Assets (GWA) and ABCC can bridge this gap, offering measurable financial benefits. These cases show that management accountants can play a critical role in linking climate data to financial decisions.

The findings also point to the need for stronger regulatory support and training for management accountants. According to Airawaty et al. (2025), only 12% of Indonesian firms train accountants to handle climate risks, limiting their ability to use tools like GWA or carbon credit monetization. Global examples, such as Saudi Arabia’s green finance policies, show that incentives like tax breaks can drive integration (Alhejaili, 2024). In Indonesia, the Carbon Tax Law (Law Number 7 of 2021) exists, but its weak enforcement fails to encourage strategic action (Sihotang, 2025). The 5% of companies in the Transformational Leadership category demonstrate that integrating SDG 13 can create competitive advantages, such as PT Kalbe Farma’s IDR 120 billion savings through low-carbon products (Yazo-Cabuya et al., 2024). This suggests that Indonesian firms can learn from both local and global best practices to move beyond compliance.

These findings highlight practical steps for companies, regulators, and accountants to strengthen climate risk integration. Companies can use tools like Green Weighted Assets and Activity-Based Carbon Costing, as shown by Bank Mandiri and PT Kalbe Farma, to cut costs and stay competitive (Zioo et al., 2023). Authorities like OJK could update regulations to offer tax benefits for reducing emissions and require climate data in financial planning (Fajri et al., 2024). Accountants would benefit from training to master climate tools and work closely with sustainability teams (Nurdiani, 2025). The study’s small sample of 15 companies limits its scope across all industries. Exploring how smaller firms adopt these tools and how stronger carbon tax policies could support climate action goals offers valuable directions for future studies. These efforts can guide Indonesian companies toward a low-carbon economy with financial gains.

CONCLUSION

This study confirms that most Indonesian public companies are stuck in a compliance-focused approach, with only a few, like Bank Mandiri and PT Kalbe Farma, successfully integrating climate risks into their financial strategies. The findings show that 75% of

companies prioritize meeting regulations like POJK 51/2017, but struggle to link SDG 13 to budgeting or investment decisions. Tools like Green Weighted Assets and Activity-Based Carbon Costing, used by top performers, prove that climate integration can reduce costs and boost revenue. These examples address the gap in strategic sustainability practices, showing that management accountants can play a key role in moving companies beyond mere reporting. This gap highlights the need for better tools and collaboration to turn climate challenges into business opportunities.

The implications of this study are clear for companies, regulators, and accountants. Companies should adopt tools like shadow pricing to make climate data part of financial planning, while regulators like OJK should offer tax breaks to encourage deeper integration. This could motivate firms to prioritize low-carbon strategies over short-term compliance. However, the study's limitation lies in its small sample of 15 companies, which may not fully represent all industries in Indonesia. Larger samples could reveal more diverse challenges and solutions. Future research should explore smaller firms and test how new regulations, like a stronger carbon tax, could drive SDG 13 adoption. These steps can help Indonesian companies turn climate challenges into business opportunities.

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