

Sustainable Financing for the Real Estate Industry: Evidence Using Critical Discourse Analysis

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Abstract

Infrastructure and real estate development serve as vital indicators of national economic progress, yet rapid urban expansion generates severe environmental challenges. In Malaysia, construction and demolition waste constitutes at least 30% of total landfill volume, while operational energy usage accounts for 90.1% of a building's 30-year lifecycle carbon emissions. To address these environmental pressures, sustainable finance has emerged as a crucial mechanism to align economic development with sustainability principles. This study evaluates how Malaysian real estate companies systematically integrate sustainable financing mechanisms into their corporate strategies to tackle industry-specific environmental impacts and meet evolving regulatory and investor demands. Adopting a qualitative research design, the study applies Critical Discourse Analysis across 24 corporate disclosures published between 2020 and 2025 by two prominent Malaysian property developers, evaluating their initiatives against the multi-dimensional sustainable finance framework established by Kumar et al. (2022). The findings reveal two distinct strategic approaches: Company A, a government-linked enterprise, adopts a capital-driven approach that prioritizes external community initiatives, ecological flood corridors, biodiversity frameworks, and formal capital market instruments like its Sustainability Sukuk Framework. Conversely, Company B, a top private developer with diversified holdings, channels capital inward to enhance operational efficiency through renewable energy assets, including solar thermal installations, co-generation plants, water recycling, and methane capture at its palm oil facilities. The study demonstrates that firm ownership structure, asset portfolio, and corporate governance fundamentally dictate whether a developer leverages financial market products or internal process retrofits to achieve decarbonization. Ultimately, this research underscores the necessity of standardized metrics to measure the empirical financial and environmental yields of sustainable capital allocation, offering critical insights for property developers, financial regulators, and urban planners across emerging markets.

Keywords: Sustainable Finance, ESG Integration, Real Estate Development, Construction Waste, Decarbonization, Critical Discourse Analysis, Malaysia

Introduction

The quality and extent of infrastructure development are widely recognised as key indicators of national success. Governments often initiate construction projects to meet societal needs, using public funding or public-private partnerships. Despite these efforts, rapid development and expansion often generate significant environmental challenges. In Malaysia, construction and demolition waste accounts for at least 30% of total landfill waste. Approximately 90% of this waste consists of inert materials such as concrete, bricks, and masonry, which decompose very slowly or not at all. The lack of mandatory on-site waste segregation, insufficient recycling infrastructure, and high disposal costs contribute to widespread illegal dumping (Construction Industry Development Board Malaysia, 2024).

Additionally, building construction is responsible for 40% of primary energy consumption and up to 38% of carbon emissions. Over a 30-year building lifecycle in Malaysia, operational energy use accounts for about 90.1% of total carbon emissions (Zainon et al. al, 2022). Earthwork and excavation phases also significantly impact adjacent natural ecosystems. In regions with annual rainfall exceeding 5,000 mm, severe topsoil erosion, mudslides, and runoff from unvegetated construction sites are prevalent (Department of Statistics Malaysia, 2025). Liquid waste generated during tool washing, concrete mixing, and chemical use further contaminates nearby rivers and groundwater sources (Construction Industry Development Board Malaysia, 2024). Construction impacts can be mitigated by requiring construction companies to share some of the burden—for example, through sustainable finance.

Sustainable finance has become a critical component of the global financial system, as governments, corporations, investors, and financial institutions increasingly seek to balance economic growth with environmental protection and social well-being. Sustainable finance encompasses financial activities that integrate environmental, social, and governance (ESG) considerations into investment and financing decisions. Unlike conventional finance, which primarily emphasises risk and financial returns, sustainable finance incorporates the environmental and social impacts of economic activities into decision-making processes (Schoenmaker, 2018). This approach recognises that long-term financial stability is intrinsically connected to climate change, resource availability, social inequality, corporate accountability, and institutional quality.

Sustainable finance serves as an umbrella term for several related but conceptually distinct financing mechanisms. These mechanisms include socially responsible investing (SRI), climate finance, green finance, impact investing, carbon finance and carbon investing, emission-control financing, renewable energy financing, and sustainability-related governance. Although their objectives and implementation strategies may differ, all share the underlying principle that financial capital should support economic development without compromising environmental and social sustainability (Schoenmaker & Schramade, 2019). However, the literature remains limited on how real companies disclose sustainable finance reporting. This study addresses this gap by examining how real companies disclose sustainable finance reporting.

Literature Review

The demands for Environmental, Social and Governance (ESG) disclosure have driven the company to invest resources in sustainable finance. Industry demand, climate change, and regulatory changes drive the push for sustainable finance (Ziolo et al., 2019). Sustainable finance provides a mechanism for companies to create value by meeting regulator and investor demands. Kumar et al. (2022) identified seven major themes in sustainable finance: socially responsible investing, climate financing, green financing, impact financing, carbon investing, renewable energy, and governance of sustainable financing.

Socially Responsible Investing (SRI)

Socially responsible investing (SRI) represents one of the earliest approaches to incorporating sustainability considerations into investment decisions. SRI can be broadly defined as an investment strategy used by organisations to conduct social, environmental, and governance programmes (Renneboog et al., 2008; Matallín-Sáez et al., 2021). These programmes aim to achieve positive outcomes that benefit the company or return value to it.

Recently, SRI has evolved towards broader ESG integration (Revelli & Viviani, 2015). Previously, SRI was influenced by ethical considerations, but in current discussions, SRI is defined as companies investing more in engaging with other stakeholders, especially customers. These studies also indicate that investors' interests are shifting toward ESG performance rather than financial performance alone (Friede et al., 2015; Revelli & Viviani, 2015; Vu et al., 2024). ESG ratings are one measure of ESG performance, which also measures how many investments the company allocates to conducting social responsibility activities.

Climate Financing

Climate financing focuses on mobilising financial resources to address climate change. The financing cost to mitigate climate change and support adaptation. Mitigation financing supports activities that reduce or prevent greenhouse-gas emissions, while adaptation financing supports initiatives that strengthen the capacity of societies, economies, and ecosystems to cope with the consequences of climate change (Buchner et al., 2023; Campiglio, 2016)).

Examples of mitigation finance include investments in renewable energy, low-carbon transportation, energy-efficient buildings, industrial decarbonisation, and carbon-reduction technologies. Adaptation finance may include financing for flood protection, climate-resilient infrastructure, sustainable agriculture, water-resource management, disaster preparedness, and ecosystem restoration.

Green Financing

Green finance refers specifically to financing and investment activities that generate environmental benefits. Although green finance and sustainable finance are sometimes used interchangeably, sustainable finance is generally broader because it encompasses social and governance considerations in addition to environmental objectives. Green finance primarily concentrates on activities such as renewable energy, pollution prevention, energy efficiency, sustainable transportation, sustainable agriculture, green buildings, biodiversity protection, waste management, and water conservation (Taghizadeh-Hesary & Yoshino, 2019).

Green bonds are among the most prominent instruments in the green-finance market. Green bonds operate similarly to conventional bonds, but the proceeds are designated for projects that satisfy specified environmental criteria. Flammer (2021) found that corporate green bonds can finance environmentally beneficial projects and are associated with improved environmental performance after issuance.

Impact Investing

Impact investing refers to investments made with the intention of achieving a positive impact. It focuses on the intended impact of the investment on the organisation (Agrawal & Hockerts, 2021). Investors demand specific ESG returns over a specific period of time (Höchstädter & Scheck, 2015). Integrity issues have been discussed when specific returns are guaranteed for projects. For sustainable projects, specific returns cannot be guaranteed.

Carbon Investing

Carbon investing refers to investment and financial activities associated with carbon markets, emission allowances, carbon credits, and projects intended to reduce, avoid, or remove greenhouse-gas emissions. Carbon finance uses market-based financial mechanisms to attach economic value to greenhouse-gas emissions and emission reductions.

Carbon markets generally operate through either compliance or voluntary mechanisms. Compliance markets are established through regulatory frameworks requiring covered organisations to comply with emission limits or surrender emission allowances. Voluntary carbon markets enable organisations and individuals to purchase carbon credits voluntarily to support climate-related objectives.

Carbon pricing seeks to internalise the environmental costs associated with greenhouse-gas emissions (Balaji, 2026). By creating a financial cost for emitting carbon, carbon pricing can encourage businesses to invest in cleaner production, renewable energy, energy efficiency, and technological innovation. Metcalf and Stock (2023) show that carbon taxation can reduce emissions, but its macroeconomic effects depend heavily on policy design.

Carbon-finance projects can involve renewable-energy development, forest conservation, reforestation, methane capture, energy efficiency, and carbon-removal technologies. Consequently, carbon finance overlaps with climate finance, green finance, and renewable-energy finance.

Renewable-Energy Financing

Renewable-energy financing constitutes an important component of both green and climate finance. It involves mobilising financial resources for renewable-energy technologies such as solar photovoltaic systems, wind power, hydropower, geothermal energy, and other low-carbon energy solutions.

The transition towards renewable energy requires substantial capital investment because energy projects typically involve considerable upfront expenditure and long investment horizons. Renewable-energy financing can therefore involve commercial bank loans, project finance, green bonds, development-bank financing, infrastructure funds, private equity, public-private partnerships, and blended-finance arrangements.

Polzin (2017) identifies access to finance as an important factor affecting investment in renewable-energy technologies. Policy stability, technological maturity, electricity-market structures, regulatory frameworks, and investor perceptions of risk shape financing conditions. Stable policy frameworks can therefore help reduce investment uncertainty and attract private capital.

Taghizadeh-Hesary and Yoshino (2019) similarly emphasise the financing barriers confronting green-energy projects, including the perceived risks associated with new technologies and long investment horizons. Innovative financing mechanisms and public-sector risk sharing can therefore play important roles in mobilising private-sector investment.

Governance of Sustainable Financing

Governance is fundamental to the effectiveness and credibility of sustainable financing. Governance of sustainable finance refers to the policies, institutions, regulatory arrangements, corporate structures, reporting mechanisms, accountability systems, and monitoring processes used to ensure that sustainable financial activities genuinely contribute to their intended environmental and social objectives Schoenmaker (2018).

At the corporate level, governance determines how sustainability issues are integrated into strategic decision-making, risk management, investment evaluation, and performance monitoring. Boards of directors and senior management increasingly have responsibility for overseeing ESG risks, climate strategies, sustainability targets, and related disclosures.

Methodology

This study used a qualitative approach and employed critical discourse analysis (CDA) methods. This study utilised two case studies of two real estate companies in Malaysia. The chosen companies have sustainability roadmap that works as the guidance for the company to invest in sustainable financing. For Company A, the analyses were based on the strategic review report and sustainability statements in the integrated reporting from 2020 to 2025. For Company B, the analyses were based on the sustainability report published from 2020 to 2025. Table 1 provides details of the sustainability documents.

Table 1

Details of Sustainability Report

Company	Report	Pages
A	Sustainability Statements 2020	57
	Sustainability Statements 2021	24
	Sustainability Statements 2022	13
	Sustainability Statements 2023	13
	Sustainability Statements 2024	20
	Sustainability Statements 2025	14
	Management Discussion and Analysis 2020	75
	Management Discussion and Analysis 2021	12
	Management Discussion and Analysis 2022	79
	Management Discussion and Analysis 2023	108
	Management Discussion and Analysis 2024	125
	Management Discussion and Analysis 2025	83

B	Sustainability Report 2020	46
	Sustainability Report 2021	46
	Sustainability Report 2022	43
	Sustainability Report 2023	45
	Sustainability Report 2024	46
	Sustainability Report 2025	63

The data is based on the published sustainability reports available on their website. Therefore, the analysis does not require an ethics committee meeting because it uses publicly available data. The researchers defined the term as discussed in the literature. The researchers selected the types of sustainable financing used in Kumar et al. (2022), which listed seven categories of sustainable financing.

The researchers reviewed all information in the documents listed in Table 1 and classified the programmes under the seven categories of sustainable financing in Microsoft Excel by year. After selecting the information, the researchers identified patterns based on the literature. The themes were recognised based on their condition. The first condition is the literature discussion. The second condition is the development of the subject matter over the years. The last condition is based on the common points among the information. After identifying the themes, the reporting is based on Kumar et al. (2022). This study found several patterns across the reports.

Case Scenario

This section discusses findings from the annual sustainability reports. The discussion begins with the company background.

Company A

Company A is a government-linked company that specialises in real estate. The company has more than 50 years of operating experience. The company aims to build sustainable communities and has 25 active townships and developments. The company operates in six business areas: residential, industrial, commercial, retail, leisure, and investment. Moreover, the company also owns some hectares of oil palm plantations.

The company launched its Sustainability Strategy Roadmap 2030 in November 2023. The roadmap focused more on Environmental, Economic, Social and Governance. The roadmap set the company's direction, adding value for people, businesses, the economy, and the planet. The roadmap is a transition plan from a profit-oriented company to one that focuses more on low-carbon, nature-positive, and socially responsible practices in the real estate industry.

Company B

The company is one of Malaysia's top ten real estate companies. The company has a four-decade legacy in the property development industry. The business focuses on property development, property investments, and hospitality and leisure services. Despite being in the real estate industry, the company invested in oil palm plantations.

The company launched its Sustain Roadmap 2030 in November 2024. The roadmap is based on 12 strategies under the United Nations Holistic Sustainable Development approach. The

initiatives aim to address climate change, biodiversity, sustainable finance, waste management, employee well-being, and supply chain management.

Findings and Analysis

The findings are arranged according to six types of sustainable financing: socially responsible investing, climate financing, green financing, carbon investing, renewable energy, and governance of sustainable financing. No data illustrate the impact of financing from these two companies.

Socially Responsible Investing

Company A began focusing on socially responsible investing in 2022. The company began by introducing urban farming in housing development areas, waste management programs, and sponsorship of community activities. The programmes focused more on the internal community, which is customers who purchased the company's real estate.

Urban farming is a program to promote healthy living in the community. At the same time, the programmes serve as educational tools and as an education centre for the community. However, this program remained in practice in 2022. In 2022, Company A introduced total waste management for industrial outlets, requiring tenants to separate waste into recyclable items. The concept remains in practice. In 2022, the company engaged in sustainable community programs, such as sponsoring playgrounds for children with disabilities.

Starting in 2024, the company expanded its activities to cater to a wider range of communities. It is through collaboration programs with NGOs and social enterprises. For example, the company focused on biodiversity initiatives that help with conservation and restoration projects. The projects have long-term outcomes. However, Company B did not spend more resources on this type of financing. The summary as in Table 2.

Table 2

Socially Responsible Investing

Year	Company A	Company B
2022	- Introduced urban farming in some townships - Introduced a total waste management programme for industrial outlets - Community Services on waste recycling - Built a playground for disabled children	No information recorded
2023	Introduced a total waste management programme for industrial outlets	
2024	- Community Services with NGO on waste recycling initiatives - Implementing biodiversity initiatives on conservation and restoration projects.	
2025	Implementing biodiversity initiatives on conservation and restoration projects.	

Climate Financing

These two companies focus on two types of financing: industrial decarbonisation and energy-efficient buildings. Company A focuses more on reducing industrial emissions from 2020 to 2024. The study found several stages in reducing gas emissions. The company began developing a policy to reduce greenhouse gas emissions in 2020. In the year 2021, the company developed an accelerated plan to achieve net-zero carbon emissions. In 2022, the company developed a roadmap to reduce Scope 3 emissions. The company further enhanced the comprehensive carbon reduction roadmap in 2023. In 2024, the company continued to develop its net-zero carbon emissions goal by 2050. The summary as in Figure 1.

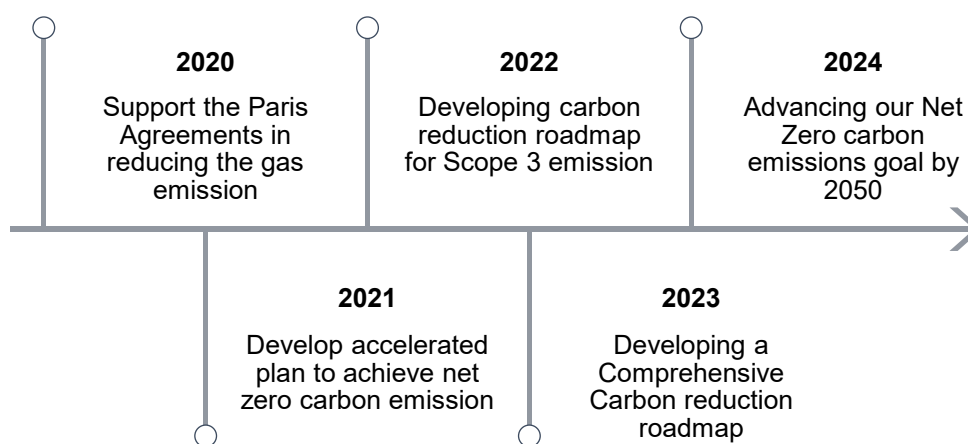


Figure 1 Industrial Decarbonisation Initiatives for Company A

In the year 2022, Company A expanded its climate financing by allocating resources to energy-efficient buildings. The company started an initiative by performing a study to embed carbon reduction in the double-storey linked house. In 2023, the company expanded the study by examining opportunities to further reduce carbon emissions for the double-storey linked house. Starting in 2024, the company implemented the earlier solar energy study to reduce carbon emissions. In 2025, the company installed rooftop solar PV systems for new projects to reduce carbon emissions. The summary is in Figure 2.

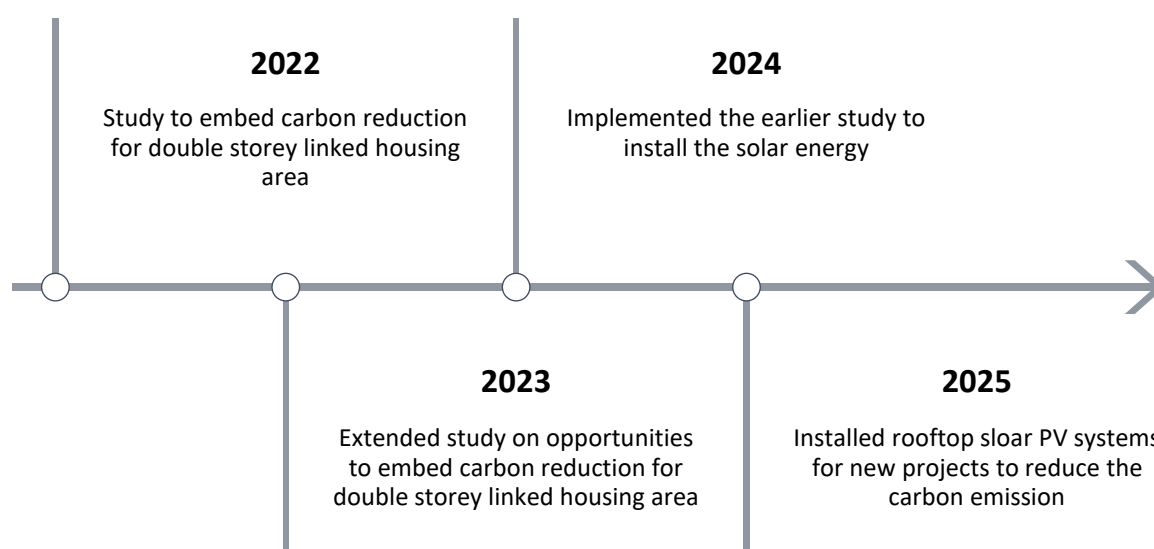


Figure 2 Energy-Efficient Buildings Initiatives for Company A

Company B focused more on industrial decarbonisation starting in 2021. The company developed a holistic approach to implementing a climate action strategy to reduce gas emissions. In 2023, the company set up methane capture facilities at palm oil mills to reduce gas emissions. The approach remained the same in 2024. In 2025, the company expanded the strategy by engaging the Science Based Targets initiative to validate reductions in gas emissions.

Green Financing

Only Company A focuses more on this green financing. The company began focusing on this in 2021 by launching deforestation financing. The company established the central park and their township. In 2022, the company promoted green spaces in its township. In 2023, the company began engaging with UNICEF to promote social inclusivity in the township. The company developed ecological corridors to support ecosystem health in the township, such as flood mitigation and preserving secondary forest areas. The company's direction changed in 2024; it focused more on gaining recognition for sustainability certification. The approach continued with the certification for industrial development.

Carbon Investing

Carbon investing is focused more on controlling emissions. In this aspect, Company A focused more on energy efficiency programmes starting in 2021. The process started with energy-saving measures in the operations department. This programme expanded to the development and product department to reduce carbon in 2022. The company introduced a minimum sustainability elements checklist to monitor carbon usage.

From 2023 to 2024, the program continued across all elements of the company, including the sanctuaries and community under the company's development. In 2024, the company established a roadmap to net-zero carbon by 2050 and began implementing it. The company started by using renewable energy to generate power for its development area. Company B

spent on carbon sequestration projects in the year 2022. The company identified conservation and reforestation areas to sustain vegetation in the housing developments. The summary is in Table 3.

Table 3

Carbon Investing

Year	Company A	Company B
2021	Started Operational Eco-Efficiency Programme	
2022	Enhanced the programme to the Energy Efficiency Programme	Initiated carbon sequestration projects
2023	Actively reducing operational carbon through Energy Efficiency Programmes via minimum elements of sustainability checklists.	
2024	Actively reducing operational carbon through Energy Efficiency Programmes via minimum elements of sustainability checklists.	
2025	Implementing Net Zero Carbon by 2050	

Renewable Energy

This study found that Company B focuses more on this area rather than other types of sustainable financing. The discussion of renewable energy can be divided into four areas: solar, water and biogas. This study began with Company A, which focused more on solar renewable energy. The company started in 2021 and increased its use of solar photovoltaic panels in product development. In 2023, the company expanded the use of rooftop solar for residential projects. In 2024, the company expanded the use of solar panels across its operational assets.

Meanwhile, Company B invested in these areas despite other renewable energy sources such as water and biogas. The company started in 2022 by installing a solar thermal power system. From 2023 to 2025, the company started installing solar panels and co-generation plants. The summary is in Table 4.

Table 4

Renewable Energy

Company	Company A	Company B
2021	Increased usage of solar photovoltaic panels in product development	
2022	Increased usage of solar photovoltaic panels in product development	Installing a solar thermal power system
2023	Expanded the usage of solar panels for residential projects	Installing solar panels and co-generation plants
2024	Expanded the use of rooftop solar across operational assets.	Installing solar panels and co-generation plants

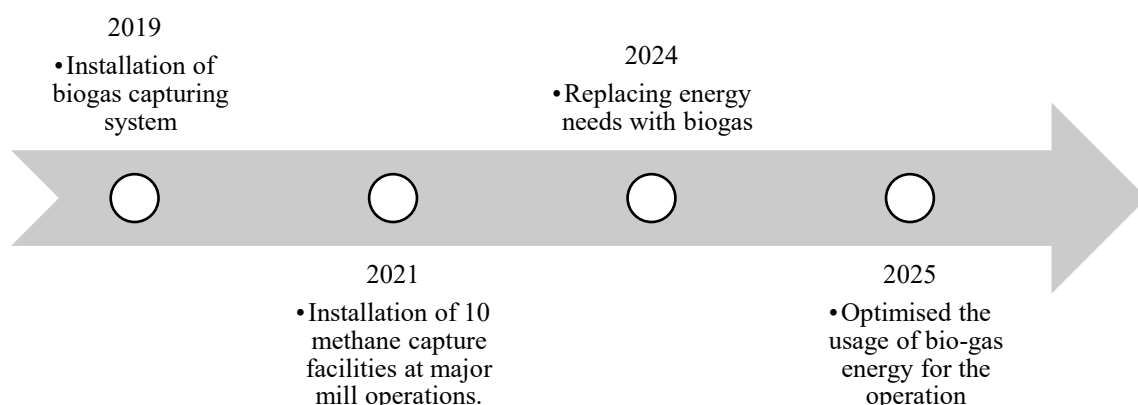


Figure 3 Renewable Energy – Water for Company B

To develop renewable energy through water, Company B installed water gates at strategic locations to keep water at the optimum level in the year 2019. In 2022, the company constructed a slit pit perpendicular to collect water from the slope. Starting in 2024, the company focused more on water recycling systems by redirecting wastewater for watering the oil palm plantations.

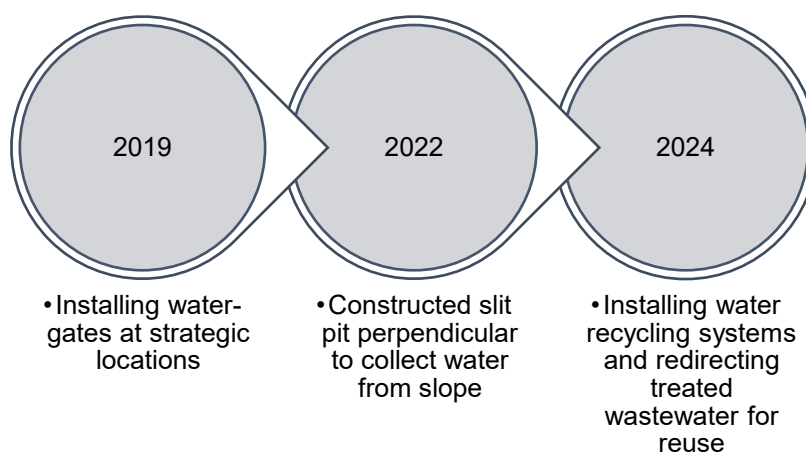


Figure 4 Renewable Energy – Biogas for Company B

Company B increased its renewable energy investment by developing biogas starting in 2019. In 2021, the company expanded biogas collection by installing 10 methane capture facilities at its oil operations. When the company reached the optimum for biogas, it decided to replace some energy needs with biogas starting in 2024 and optimised the usage of low-carbon energy in 2025. The summary is in Figure 4.

Governance of Sustainable financing

Governance of sustainable financing covers investments made to develop new guidelines or policies within the organisation. Both companies are highly involved with this kind of financing. These findings suggest that Company A focuses more on sustainability policy development. Meanwhile, the company is more inclined to use sustainable financing to

achieve sustainable goals and operational excellence. The summary of the policies is in Table 5.

Table 5

Governance of Sustainable Financing - Policy

Year	Company A	Company B
2020	Integrate long term-value creation	Implement of Best Management Practices
2021	- Develop Corporate Scorecard Sustainability KPI - Implement Minimum Sustainability Elements Guidelines and Checklists	Established Zero-Burning Policy and Fire Management Guidelines
2022	Develop Sustainability Sukuk Framework	Adopting Landscape Level Approach (LLA)
2023	Introduced Safety & Sustainability Practitioner Playbook	- Practice Regenerative Agriculture - Adapting Energy Management System
2024	- Strengthening Responsible Supply Chain Management Framework - Embed biodiversity considerations in Urban Biodiversity Framework and Guideline	
2025	Launched the Sustainability Strategy and Roadmap 2025-2030	

Discussion and Conclusion

Company A prioritizes sustainability performance by allocating substantial financial resources to initiatives specifically designed to achieve this objective. The company directs capital toward projects and programs anticipated to generate both environmental and social benefits. Through these investments, Company A seeks to enhance its ESG (Environmental, Social, and Governance) rating, consistent with research demonstrating that investments in socially responsible activities can improve overall company performance (Friede et al., 2015; Revelli & Viviani, 2015; Vu et al., 2024). These studies indicate that organisations that emphasise sustainability are more likely to achieve long-term success and resilience amid changing market expectations and regulatory requirements.

Beyond internal initiatives, Company A contributes to climate finance mitigation by directing financial resources toward projects that reduce greenhouse gas emissions and support climate adaptation. Previous research underscores the significance of private sector participation in achieving global climate objectives (Buchner et al., 2023; Campiglio, 2016). To maximise the effectiveness of its climate financing strategies, Company A has developed a comprehensive implementation framework that it reviews and refines annually. This

framework includes setting specific targets, monitoring outcomes, and incorporating lessons learned to enhance impact over time.

In contrast, Company B adopts a different strategy, focusing primarily on improving operations to boost its ESG scores. Rather than emphasising financial investments in external projects, Company B channels its resources predominantly into internal improvements, such as transitioning its waste management systems from conventional methods to renewable energy solutions. This targeted investment not only supports environmental sustainability but also positions the company to respond proactively to regulatory changes and stakeholder expectations. By focusing on operational efficiency and innovation, Company B seeks to build a more sustainable business model while achieving measurable improvements in its ESG performance.

The companies employ distinct strategies. The effectiveness of sustainability financing implementation depends on factors such as company type, years of establishment, and endogenous variables including business opportunities and demand for public and capital contributions. This paper primarily examines companies' efforts to implement sustainability financing.

This research could be expanded by analysing how a company's approach affects its financial and social contributions. Future studies may also investigate the perspectives of the board of directors and staff regarding the company's strategy. Additionally, researchers could examine the challenges companies encounter when implementing sustainable financing.

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