From Reporting to Responsibility: An Analysis of Environmental Sustainability Indicators among Malaysian Firms

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ABSTRACT:

This study investigates environmental sustainability reporting among 214 Malaysian public-listed companies over the period 2018–2022. Focusing on six key environmental indicators (EN1–EN1.5) derived from the Global Reporting Initiative (GRI Standards) and the Bursa Malaysia Sustainability Reporting Framework, the research assesses the extent and progression of environmental disclosure across dimensions such as total environmental reporting, 3R practices, reuse and reduction activities, recycling, eco-friendly product innovation, and waste management systems. Descriptive statistics and trend analysis were used to evaluate reporting patterns over time. The results reveal a consistent upward trend across all indicators, reflecting firms' growing commitment to environmental responsibility and the institutionalisation of sustainability practices within corporate governance. The findings support institutional theory, suggesting that regulatory pressures, stakeholder expectations, and industry norms have collectively driven greater environmental accountability and standardisation in disclosure practices. Overall, this study contributes longitudinal evidence on corporate environmental reporting in an emerging economy context. It highlights how Malaysian firms are transitioning from compliance-based disclosure to integrated sustainability management, aligning with international reporting standards and contributing to the achievement of the Sustainable Development Goals (SDGs).

Keywords: Corporate Environmental Disclosure; Environmental Sustainability Reporting; Institutional Theory; Malaysia; Sustainable Development Goals (SDGs)

INTRODUCTION

In recent years, the pursuit of sustainable development has become a central agenda in corporate strategy, driven by global concerns about climate change, environmental degradation, and social responsibility (Avotra et al., 2021). Businesses are increasingly expected to demonstrate accountability not only for their financial performance but also for their environmental and social impacts (Tjahjadi et al., 2021). Consequently, environmental sustainability reporting has evolved as a key mechanism through which firms communicate their environmental performance, resource use, and ecological footprint to stakeholders. The integration of sustainability reporting into corporate disclosure practices reflects an important shift from voluntary social responsibility to strategic sustainability management (Abate et al., 2025; Monazzam & Nilsson, 2025).

In Malaysia, environmental sustainability reporting has gained momentum following the Bursa Malaysia Sustainability Reporting Framework (2015), which mandates listed firms to disclose their sustainability practices and performance (Kee et al., 2021; Misman & Adnan, 2023; Shafai & Abd-Mutalib, 2024). This regulatory push has strengthened corporate commitment to transparent and responsible sustainability practices. In particular, the Global Reporting Initiative (GRI Standards), the Bursa Malaysia Sustainability Reporting Guide (2015 and 2nd Edition, 2022), and the United Nations Sustainable Development Goals (SDGs) have collectively encouraged firms to integrate environmental considerations into their governance and reporting structures (Yatim, 2024;

Yazid & Maryani 2025). Despite these advancements, the extent and consistency of environmental disclosure among Malaysian firms remain uneven, varying across industries and time.

While prior studies have examined sustainability reporting in Malaysia, most have focused on cross-sectional analyses, providing only a snapshot of disclosure practices in a given year (Ajibike et al., 2023). There remains a lack of longitudinal evidence especially in developing countries that captures how firms' environmental reporting evolves over time, especially in response to policy changes, investor pressure, and global sustainability frameworks (Akhter et al., 2023; Hamad et al., 2023). Moreover, previous studies have often emphasised general sustainability indices without disaggregating specific environmental dimensions such as recycling, waste management, or eco-friendly product innovation.

This study addresses these gaps by conducting a five-year longitudinal analysis (2018–2022) of environmental sustainability disclosure among 214 Malaysian public-listed companies. By disaggregating environmental reporting into six detailed indicators; EN1 (Total Environmental Disclosure), EN1.1 (3R Practices), EN1.2 (Reuse and Reduce Activities), EN1.3 (Recycling of Waste), EN1.4 (Eco-Friendly Products), and EN1.5 (Waste Management Systems), the research provides a contexual understanding of how firms are transitioning from basic environmental reporting to integrated sustainability management systems. In other words, it contributes to the understanding of how Malaysian firms have transitioned from symbolic reporting to more substantive sustainability practices.

The primary objective of this study is to examine the extent and trend of environmental sustainability reporting among Malaysian public-listed companies over the period from 2018 to 2022. Specifically, the study aims to assess how firms have improved their disclosure practices in response to evolving regulatory requirements, stakeholder expectations, and global sustainability frameworks. By analysing six key environmental indicators; namely EN1 (Total Environmental Sustainability Disclosure), EN1.1 (Practice 3R), EN1.2 (Reuse and Reduce Activities), EN1.3 (Recycling of Waste), EN1.4 (Production of Degradable or Eco-Friendly Products and Services), and EN1.5 (Waste Management System), this research seeks to capture the depth and breadth of firms' environmental accountability. Furthermore, the study aims to determine whether Malaysian companies are moving from basic compliance-oriented reporting toward a more strategic and integrated sustainability management approach aligned with international frameworks such as the Global Reporting Initiative (GRI), the International Sustainability Standards Board (ISSB), and the Sustainable Development Goals (SDGs).

The descriptive analysis reveals a steady upward trend in environmental disclosure among Malaysian firms over the five-year period. The mean scores of EN1 and its sub-indicators (EN1.1–EN1.5) suggest that companies have increasingly integrated environmental initiatives into their operations. The findings indicate notable improvements in 3R practices, waste management, and eco-friendly product innovation, demonstrating firms' responsiveness to both regulatory requirements and stakeholder expectations. The results also suggest a transition from ad hoc environmental activities toward more structured and institutionalised sustainability management systems. This is in alignment with the frameworks such as the Global Reporting Initiative (GRI Standards), the United Nations Sustainable Development Goals (SDGs), and the Bursa Malaysia Sustainability Reporting Guide (2nd Edition, 2022).

The remainder of this paper is organised as follows. The next part reviews relevant literature and develops the study's hypotheses, drawing on previous research and theoretical perspectives on environmental sustainability reporting. After that, the paper outlines the research methodology, detailing the sample selection, data collection process, variable measurements, and analytical techniques used in the study. This is followed by a presentation and discussion of the findings, highlighting the key trends and patterns observed in firms' environmental disclosure practices. Finally, the paper concludes by summarising the main insights, outlining the practical implications, and suggesting directions for future research on corporate sustainability reporting.

LITERATURE REVIEW

A. Environmental Sustainability Reporting: Global Context

Environmental sustainability reporting has become an essential component of corporate accountability in the 21st century (Dimitriou & Karagkouni, 2022; Lai & Stacchezzini, 2021; Sisaye, 2021). Globally, firms are under

increasing pressure to disclose how their operations affect the environment, aligning with broader sustainability frameworks such as the Global Reporting Initiative (GRI Standards), the United Nations Sustainable Development Goals (SDGs), and the Bursa Malaysia Sustainability Reporting Guide (2015 and 2nd Edition, 2022) (Hamad et al., 2023; Yazid & Maryani 2025). According to Hahn and Kühnen (2013), sustainability reporting enables organisations to communicate their environmental performance and risk management practices, fostering transparency and stakeholder trust. Similarly, Cho et al. (2015) emphasised that environmental disclosures not only inform stakeholders but also enhance a firm's accountability in the eyes of regulators and investors.

In recent years, the integration of environmental, social, and governance (ESG) dimensions into corporate reporting has strengthened the role of sustainability as a strategic imperative rather than a voluntary practice (Jiang & Tang, 2023; Rouen et al., 2022). Research by de Villiers et al. (2021) highlights that firms with consistent environmental disclosures tend to achieve superior market valuation and reputation outcomes, indicating that sustainability transparency has become a source of competitive advantage.

B. Environmental Disclosure in the Malaysian Context

Malaysia has progressively advanced its sustainability reporting landscape, particularly after Bursa Malaysia's 2015 directive that mandated sustainability disclosures for all listed firms (Alam et al., 2022; Rani & Haris, 2025). The introduction of the Bursa Malaysia Sustainability Reporting Guide (2015 and 2nd Edition, 2022) further refined disclosure expectations by emphasising materiality, performance indicators, and integration with strategic objectives. Studies such as Amran and Haniffa (2011) and Hizam et al. (2020) found that while Malaysian companies have increased their sustainability disclosures, the depth and quality of reporting still vary significantly between industries.

Furthermore, Sulaiman et al. (2020) observed that firms in environmentally sensitive sectors (e.g., energy, plantations, and manufacturing) tend to disclose more environmental information compared to firms in service industries. However, the transition from compliance-based to performance-oriented disclosure remains gradual. The introduction of the Sustainability Reporting Guide has begun to close this gap, encouraging Malaysian firms to adopt internationally recognised environmental metrics consistent with the GRI and SDG frameworks.

Elaigwu et al. (2024) examined the relationship between corporate integrity, external assurance, and the quality of sustainability reporting among Malaysian public-listed companies. Their study found that as firms increasingly adopt integrity-driven governance and seek third-party assurance for their sustainability disclosures, the overall quality, reliability, and transparency of reporting have improved significantly. The authors argue that sustainability reporting in Malaysia has evolved beyond a compliance requirement into a strategic communication tool that enhances stakeholder trust and demonstrates corporate accountability. This shift is attributed to institutional pressures, including regulatory expectations from Bursa Malaysia and normative influences from global reporting frameworks. The study's findings support the view that corporate sustainability reporting in Malaysia is becoming more embedded within governance structures, aligning closely with institutional theory's assertion that external and normative forces shape organisational behaviour and disclosure practices.

C. Theoretical Perspectives

The theoretical foundation of this study is anchored in stakeholder theory and institutional theory, both of which provide strong conceptual explanations for environmental sustainability reporting practices (Del Gesso & Lodhi, 2025; Mahmud, 2020). Stakeholder theory (Freeman, 1984) posits that corporations are accountable not only to shareholders but also to a broader group of stakeholders who are affected by corporate activities. These stakeholders include regulators, customers, employees, and local communities (Azzone et al., 1997 Latip et al., 2022). Under this view, environmental reporting serves as a key communication tool through which firms convey their commitment to sustainability and transparency (Sari & Muslim, 2024). By disclosing environmental initiatives, companies aim to satisfy stakeholder expectations, enhance corporate reputation, and firm performance (Akhter et al., 2023; Azzone et al., 1997). The increasing demand for accountability from investors and society has therefore positioned sustainability reporting as a strategic response to stakeholder pressures.

Complementing this, institutional theory (DiMaggio & Powell, 1983) suggests that firms adopt environmental disclosure practices as a result of external institutional pressures, including regulatory requirements, normative expectations, and industry best practices. Over time, these pressures lead to institutional isomorphism, where organisations within the same environment converge toward similar sustainability practices (Amoako et al., 2021; Anlesinya et al., 2023). In the Malaysian context, the adoption of the Bursa Malaysia Sustainability Reporting Guide and the Global Reporting Initiative (GRI Standards) reflects such institutional conformity. Firms increasingly view environmental reporting not merely as compliance but as a standardised expectation within the corporate field. Together, stakeholder and institutional theories explain how both external expectations and systemic pressures shape the evolution and institutionalisation of environmental disclosure practices among Malaysian firms (Wu & Memon, 2022).

D. Dimensions of Environmental Sustainability Disclosure

This study focuses on six key environmental indicators derived from the Global Reporting Initiative (GRI Standards) and the Bursa Malaysia Sustainability Reporting Guide, identified as EN1 through EN1.5. Each indicator reflects a distinct aspect of corporate environmental management and collectively provides a holistic view of firms' environmental accountability.

The first indicator, EN1 (Total Environmental Sustainability Disclosure), captures a firm's overall commitment to environmental responsibility. It measures the extent to which companies disclose their environmental policies, initiatives, and outcomes. According to Michelon et al. (2015), comprehensive environmental disclosures are strongly associated with enhanced transparency and investor confidence, signifying a firm's proactive stance on sustainability governance.

The second indicator, EN1.1 (Practice 3R: Recycle, Reuse, Reduce), aligns closely with Sustainable Development Goal (SDG) 12, which promotes responsible consumption and production. Research by Sroufe (2017) demonstrates that adopting 3R initiatives enables firms to improve resource efficiency, lower production costs, and strengthen their environmental image, thereby improving competitiveness. Similarly, EN1.2 (Reuse and Reduce Activities) reflects corporate efforts to minimise material consumption through improved operational processes and sustainable procurement. As Bui et al. (2021) note, firms reporting on reuse and reduction activities are often driven by both cost efficiency and environmental stewardship, reflecting a shift toward circular economy practices.

The next dimension, EN1.3 (Recycling of Waste), serves as an indicator of operational sustainability and environmental management maturity. Yusoff et al. (2019) found that Malaysian manufacturing firms have increasingly reported recycling initiatives, largely in response to regulatory requirements and heightened stakeholder expectations regarding waste reduction. Meanwhile, EN1.4 (Degradable or Eco-Friendly Products) represents firms' innovation capacity in developing environmentally friendly products and services. Fernando and Lawrence (2014) highlight that eco-innovation enhances corporate competitiveness by meeting consumer demand for sustainable alternatives and reducing environmental footprints.

Lastly, EN1.5 (Waste Management Systems) demonstrates the extent to which companies have established structured waste monitoring and disposal frameworks. Ahmad et al. (2021) observed that improvements in this area often coincide with enhanced compliance with environmental regulations and internal governance standards. Collectively, these six indicators (EN1–EN1.5) provide a comprehensive framework for assessing how Malaysian firms have progressed from merely reporting environmental activities to embedding sustainability principles into their strategic and operational systems.

RESEARCH METHODOLOGY

A. Research Design

This study adopts a quantitative longitudinal research design to examine the changes of environmental sustainability reporting among Malaysian firms over a five-year period (2018–2022). The design enables the identification of trends, patterns, and consistency in environmental disclosure practices across industries and years. A content analysis approach was employed, consistent with prior sustainability disclosure studies (e.g., Hahn & Kühnen, 2013; Fernando & Lawrence, 2014).

B. Sample Selection

The sample consists of 214 Malaysian public-listed companies on Bursa Malaysia. Firms were selected through stratified random sampling to ensure representation across major sectors (industrial, consumer, services, plantation, financial, and technology). Financial institutions were retained in the sample, as their sustainability disclosures have increased since Bursa Malaysia's Sustainability Reporting Framework (2015).

Data were manually extracted from annual reports and sustainability reports published between 2018 and 2022. Each report was reviewed for environmental disclosure content following the guidelines of the Global Reporting Initiative (GRI Standards) and Bursa Malaysia's Sustainability Reporting Guide (2015 and 2nd Edition, 2022).

C.Measurement and Analysis of Variables

Environmental sustainability disclosure was measured through six indicators, denoted as EN1–EN1.5, developed based on GRI 300 (Environmental Series) and prior Malaysian ESG literature:

Table 1: Indicator Description for the Environmental Disclosure

Code	Indicator Description	Example Disclosure Items
EN1	Total Environmental Sustainability Disclosure	Overall commitment to environmental practices and reporting frameworks
EN1.1	Practice 3R (Recycle, Reuse, Reduce)	Waste minimisation initiatives, recycling programs
EN1.2	Reuse and Reduce Activities	Material efficiency, packaging reduction
EN1.3	Recycling of Waste	Waste segregation, recycling partnerships
EN1.4	Degradable or Eco-Friendly Products	Product innovation, biodegradable materials
EN1.5	Waste Management System	Waste monitoring, disposal, compliance systems

Table 1 shows the description of environmental disclosure indicators (EN1–EN1.5) used in this study, which were adapted from the Global Reporting Initiative (GRI Standards) and the Bursa Malaysia Sustainability Reporting Framework. Each indicator was coded on a binary or weighted disclosure scale (1 = disclosed; 0 = not disclosed), with the total environmental score (EN1) representing the aggregate of all sub-indicators.

Descriptive statistics (mean, standard deviation, and frequency) were used to identify the extent and trend of environmental disclosure from 2018 to 2022. The data were analysed using Microsoft Excel and SPSS version 20 to compute the mean disclosure index for each indicator and year.

The collected data were subjected to descriptive statistical analysis to determine the extent, variability, and temporal trends of environmental sustainability reporting among Malaysian firms. This approach is consistent with prior sustainability reporting studies (e.g., Sulaiman et al., 2020; Ahmad et al., 2021) that rely on quantitative indicators to measure disclosure performance.

The analysis was executed using Microsoft Excel 365 for preliminary data aggregation and IBM SPSS Statistics version 29 for statistical computation. The data were cleaned, coded, and verified for accuracy before analysis to ensure robustness and reproducibility. A visual trend analysis was conducted using bar charts to depict the progression of environmental disclosure practices over the five-year period. The charts illustrate how each indicator (EN1–EN1.5) evolved annually, enabling comparison of disclosure maturity across indicators.

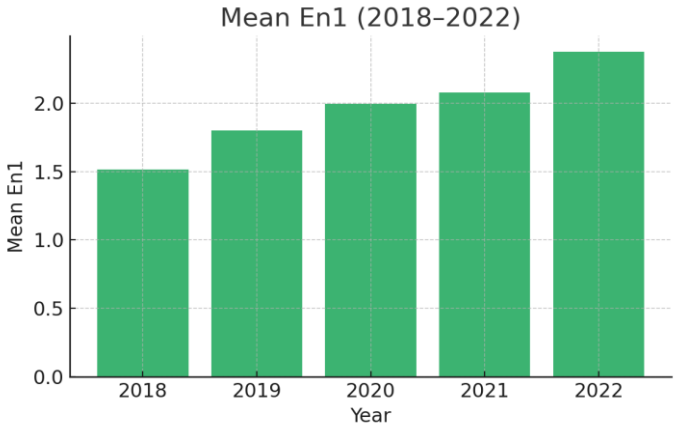
To ensure content validity, the disclosure index was reviewed by two sustainability experts and benchmarked against established frameworks (GRI and SDGs). Inter-coder reliability was assessed through independent coding of 10% of the sample, resulting in a Cohen's Kappa score above 0.85 **(**Schober et al., 2021). This demonstrates strong consistency in the coding of environmental disclosure indicators (EN1–EN1.5)

DISCUSSION AND FINDINGS

This section presents the findings derived from the analysis of environmental sustainability reporting indicators (EN1–EN1.5) among 214 Malaysian public-listed companies from 2018 to 2022. The analysis focuses on the

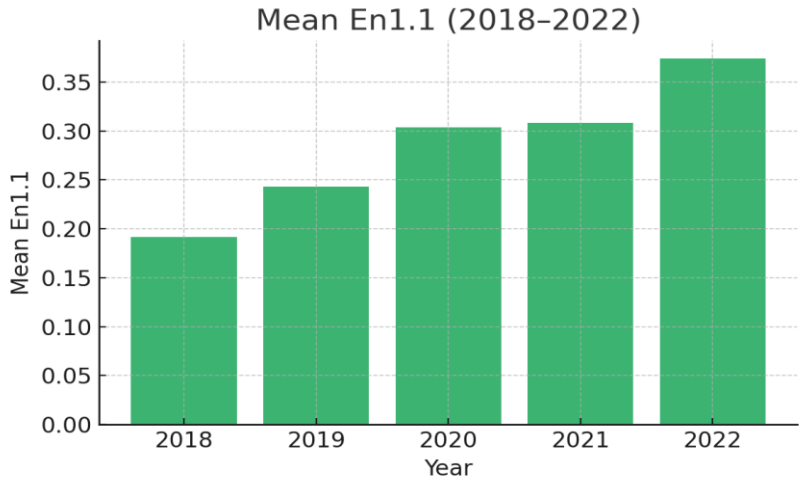
extent and trend of environmental disclosure over the five-year period, capturing how firms have responded to evolving sustainability expectations and regulatory developments. The upward trends observed across most indicators suggest that Malaysian companies have progressively improved their environmental reporting practices. This improvement is likely driven by the cumulative influence of earlier regulatory frameworks, particularly the Bursa Malaysia Sustainability Reporting Framework (2015) and the first edition of the Bursa Malaysia Sustainability Reporting Guide (2016). Additionally, the growing stakeholder pressure and international alignment with frameworks such as the Global Reporting Initiative (GRI Standards) and the United Nations Sustainable Development Goals (SDGs). The findings show each environmental indicator in detail, linking quantitative trends to the broader institutional and market context that shaped corporate sustainability disclosure during the 2018–2022 period.

Figure 1: EN1 – Total Environmental Sustainability Reporting Indicator



As depicted in Figure 1, the mean trend for EN1, which represents the overall extent of environmental sustainability disclosure, shows a steady increase from 2018 to 2022. This upward movement indicates that Malaysian firms have progressively enhanced their environmental reporting practices over time. The improvement likely reflects the cumulative impact of the Bursa Malaysia Sustainability Reporting Framework (2015) and the first edition of the Sustainability Reporting Guide (2016)**,** both of which laid the foundation for systematic disclosure requirements. Moreover, the trend suggests that environmental topics are becoming increasingly embedded within corporate governance structures and reporting routines. The gradual rise in EN1 scores also mirrors growing stakeholder awareness and investor demand for environmental accountability. Figure 1 shows the consistent increase across the five-year period implies that environmental sustainability reporting has evolved from a compliance exercise into an integral aspect of corporate transparency among Malaysian public-listed firms. This is also consistent with the findings from Elaigwu et al., (2024) that shows sustainability reporting in Malaysia has improved significantly in quality and transparency.

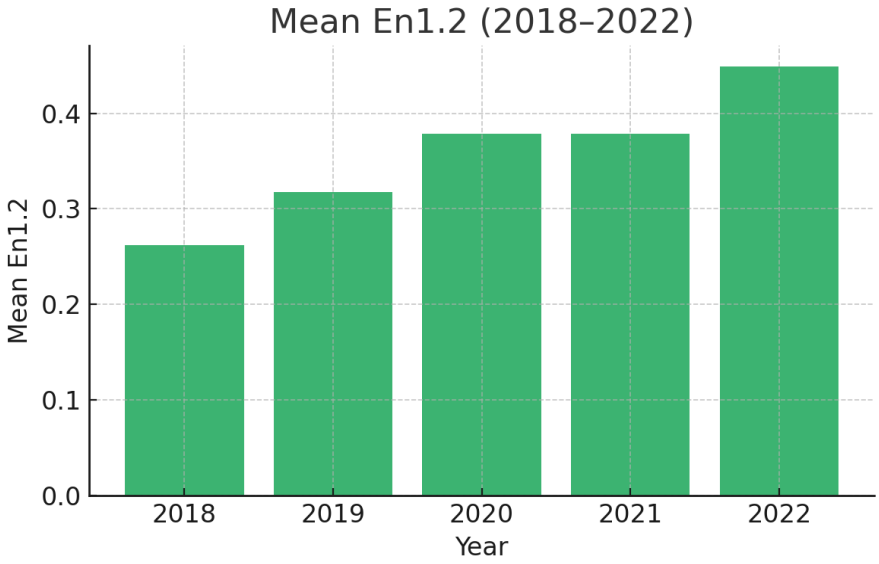
Figure 2: EN1.1 – Practice 3R (Recycle, Reuse, Reduce)



The mean trend for EN1.1, as shown in Figure 2, represents firms' disclosure of 3R (Recycle, Reuse, Reduce) practices and demonstrates a consistent upward movement from 2018 to 2022. This steady increase indicates that Malaysian companies have progressively adopted and disclosed initiatives related to resource efficiency and waste reduction. The pattern suggests that firms are increasingly internalising circular economy principles and embedding environmental efficiency into their operational and reporting frameworks.

This improvement can be attributed to the growing emphasis on responsible production and consumption promoted through ASEAN's sustainability agenda and Sustainable Development Goal (SDG) 12 (Responsible Consumption and Production). It also reflects the influence of earlier Bursa Malaysia guidelines (2015–2016), which encouraged companies to articulate measurable environmental initiatives. The rise in EN1.1 scores implies that environmental sustainability has evolved from peripheral corporate activity to an integrated element of business strategy, particularly within sectors that generate higher levels of operational waste. In essence, the upward trajectory in EN1.1 reflects not only compliance with sustainability norms but also a broader shift toward proactive environmental stewardship and the institutionalisation of waste minimisation practices among Malaysian firms.

Figure 3: EN1.2 – Reuse and Reduce Activities

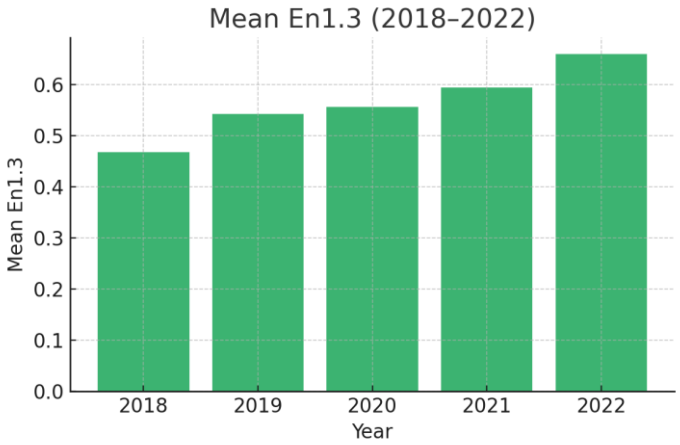


The EN1.2 trend as shown in Figure 3 represents firms' specific disclosure on reuse and reduction initiatives**.** Any increase between 2018 and 2022 implies rising commitment to material efficiency and reduced environmental footprint. However, if fluctuations occur, they may reflect operational or industry-specific constraints that limit waste reduction programmes.

As illustrated in Figure 3, the mean trend for EN1.2 shows a gradual and consistent increase from 2018 to 2022, indicating that Malaysian firms have progressively enhanced their disclosure of reuse and reduction initiatives. This upward trend suggests a growing organisational commitment to material efficiency**,** reflecting efforts to optimise resource utilisation and minimise waste generation within production and operational processes. The results imply that firms are increasingly internalising sustainable consumption practices, consistent with the objectives of SDG 12 (Responsible Consumption and Production) and Malaysia's broader sustainability agenda.

The steady rise in EN1.2 values also reflects firms' transition from ad-hoc waste minimisation measures toward systematic resource management strategies, such as product redesign, supply chain optimisation, and waste segregation systems. This demonstrates that environmental considerations are becoming integrated into the operational core of businesses rather than treated as peripheral initiatives. While minor year-to-year variations may occur due to industry-specific or operational constraints, the overall trend points to a positive and sustained improvement in reuse and reduction reporting. This pattern highlights a deepening awareness among Malaysian companies of the economic and environmental benefits of resource efficiency as part of long-term sustainability performance.

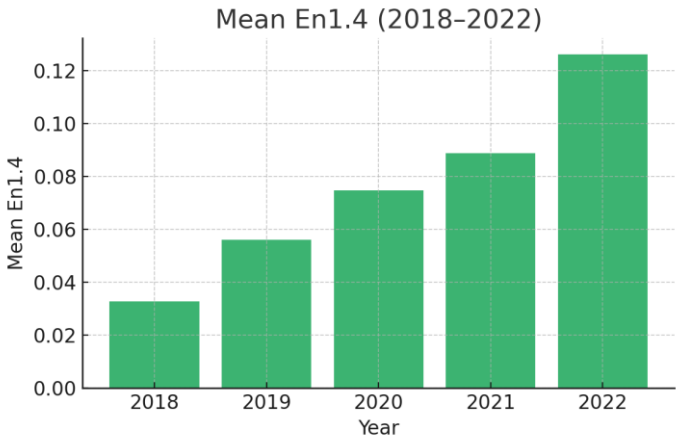
Figure 4: EN1.3 – Recycling of Waste



As shown in Figure 4, the mean trend for EN1.3 demonstrates a steady increase from 2018 to 2022, indicating that Malaysian firms have progressively strengthened their waste recycling disclosures. This upward trend reflects growing corporate commitment to structured waste management programs and enhanced transparency in reporting such initiatives. The consistent improvement over time suggests that companies are responding to both regulatory expectations, especially those established under Malaysia's environmental legislation and the Bursa Malaysia Sustainability Reporting Framework (2015). Furthermore, the stakeholder pressure could possibly be the reason to adopt more responsible production practices.

The gradual rise in EN1.3 values also signifies an operational shift from basic recycling initiatives toward more systematic waste segregation, recovery, and resource reuse mechanisms**.** These developments align with Malaysia's national waste management policies and broader sustainability goals that promote a transition toward a circular economy**.** Any minor fluctuations in the trend, particularly during the 2020–2021 period, could be attributed to disruptions caused by the COVID-19 pandemic, which affected recycling supply chains and logistics operations across industries. Overall, the positive trend in EN1.3 highlights the increasing institutionalisation of waste recycling practices, highlighting that Malaysian firms are progressively embedding sustainability within their operational and disclosure frameworks.

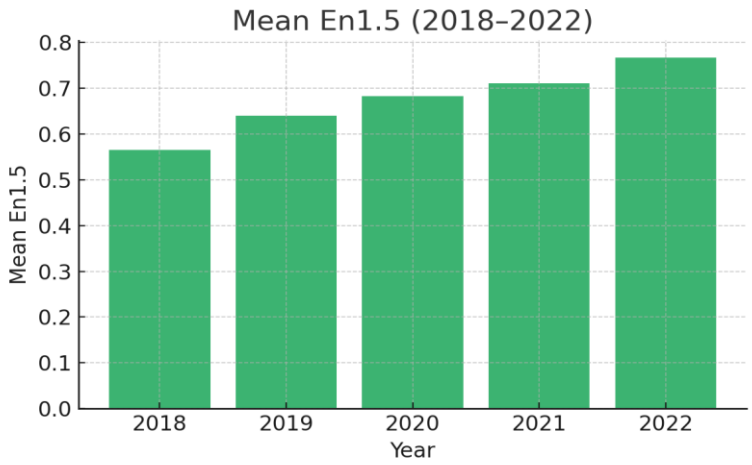
Figure 5: EN1.4 – Production of Degradable or Eco-Friendly Products and Services



As illustrated in Figure 5, the mean trend for EN1.4 shows a steady upward movement from 2018 to 2022, indicating a growing emphasis among Malaysian firms on the production and disclosure of degradable or eco-friendly products and services. This pattern reflects an increasing shift toward sustainable product innovation**,** as companies respond to changing consumer preferences, stricter environmental regulations, and the global movement toward low-carbon economies. The rise in EN1.4 suggests that firms are beginning to incorporate environmental considerations into product design and development, particularly in manufacturing and consumer goods sectors where material impact and packaging sustainability are key performance dimensions.

The improvement in EN1.4 also demonstrates firms' alignment with Sustainable Development Goal (SDG) 9 (Industry, Innovation, and Infrastructure) and SDG 13 (Climate Action) highlighting the role of innovation in addressing environmental challenges. This trend signifies a transition from reactive environmental compliance to proactive eco-innovation, where businesses pursue competitive advantage through sustainable differentiation. By embedding eco-friendly product initiatives within their strategic and operational processes, Malaysian companies are not only enhancing market reputation but also contributing to long-term environmental resilience and national sustainability objectives. Overall, the consistent increase in EN1.4 shows the growing institutionalisation of green innovation as a key component of corporate sustainability performance.

Figure 6: EN1.5 – Waste Management System



As depicted in Figure 4.6, the mean trend for EN1.5 shows a steady and continuous increase from 2018 to 2022, indicating that an increasing number of Malaysian firms have established and disclosed structured waste management systems. This upward movement reflects the growing institutionalisation of formal waste tracking, segregation, and disposal mechanisms, signalling a shift from informal or ad-hoc waste handling toward more systematic governance frameworks. The trend also suggests heightened compliance with national and regional environmental regulations, such as Malaysia's Environmental Quality Act (1974) and related industrial waste management guidelines, which have progressively encouraged companies to adopt stronger internal environmental controls.

A consistently high mean value for EN1.5 further indicates that waste management has become an embedded and routine corporate practice, reflecting organisational maturity in environmental governance. The improvement may also be attributed to firms' efforts to align their sustainability practices with global frameworks such as the Global Reporting Initiative (GRI Standards) and Sustainable Development Goal (SDG) 12, Responsible Consumption and Production**.** Overall, the sustained upward trend in EN1.5 shows the evolution of Malaysian firms from basic waste compliance toward comprehensive, system-based waste governance models that integrate environmental accountability into corporate strategy and reporting.

Overall, the findings from EN1 to EN1.5 demonstrate a clear shift among Malaysian firms from basic environmental disclosure toward more structured and integrated sustainability management practices. This upward progression reflects growing organisational maturity, stronger adherence to national regulatory frameworks, and increasing alignment with international sustainability standards such as the Global Reporting Initiative (GRI Standards) and the Sustainable Development Goals guidelines. Collectively, these results highlight how corporate environmental reporting in Malaysia has evolved into a more strategic and institutionalised practice, contributing to the achievement of key Sustainable Development Goals (SDGs 8, 9, 12, 13, and 16) and highlighting firms' deepening commitment to long-term environmental accountability.

CONCLUSION AND RECOMMENDATIONS

This study examined the environmental sustainability reporting practices of 214 Malaysian public-listed companies from 2018 to 2022, focusing on six key environmental indicators (EN1–EN1.5) derived from the

Global Reporting Initiative (GRI Standards) and the Bursa Malaysia Sustainability Reporting Framework. The findings reveal a progressive improvement in environmental disclosure across all indicators, reflecting firms' growing commitment to environmental accountability and governance. Over time, companies have transitioned from basic compliance-driven reporting toward more structured, integrated sustainability management systems. These developments indicate increasing institutionalisation of environmental practices and a stronger alignment with international sustainability frameworks and the United Nations Sustainable Development Goals (SDGs).

From a theoretical perspective, the findings provide strong support for institutional theory, which explains how organisations conform to regulatory, normative, and mimetic pressures to achieve social and operational legitimacy within their institutional environments. The consistent improvement in environmental disclosure reflects how Malaysian firms are responding to evolving expectations from regulators, investors, and industry peers, driven by both coercive and normative forces. This institutional influence has encouraged firms to standardise their reporting practices, embed sustainability governance within their organisational systems, and align with global disclosure frameworks. Practically, this evolution highlights that environmental reporting in Malaysia has matured into a structured mechanism for enhancing corporate accountability, transparency, and competitiveness in the sustainability domain.

Despite these contributions, this study has certain limitations. The analysis relied on secondary data extracted from publicly available annual reports, which may not capture the full depth of firms' internal sustainability initiatives or informal environmental activities. Furthermore, the focus on descriptive analysis limits the ability to infer causal relationships between regulatory influences and disclosure performance. Nonetheless, the study contributes meaningfully to the literature by offering an empirical overview of environmental reporting trends in Malaysia over a five-year period, providing a valuable baseline for policymakers, regulators, and researchers to understand corporate environmental disclosure maturity within an emerging economy context.

Future research could extend this study by incorporating a larger dataset or applying panel regression models to examine the determinants and performance implications of environmental disclosure. Comparative studies across ASEAN countries would also offer insights into regional convergence and policy harmonisation in sustainability reporting. Additionally, integrating qualitative methods such as interviews or content analysis could provide deeper understanding of managerial motivations, stakeholder influence, and the internal decision-making processes that shape sustainability disclosure practices.

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