The Evolution of Environmental Disclosure Practices in Indonesia

Indah Fajarini Sri Wahyuningrum[1*], Hasan Mukhibad[1], Shanty Oktavilia[2], Retnoningrum Hidayah[1], Andryan Setyadharma[2], and Regina Cahyani Yunita[1]

[1] Department of Accounting, Faculty of Economics and Business, Universitas Negeri Semarang, Semarang, Indonesia
[2] Department of Economics Development, Universitas Negeri Semarang, Semarang, Indonesia

*E-mail: i.fajarini@mail.unnes.ac.id

Abstract. As part of sustainability principles, stakeholders demanded environmental disclosure practices that led to the business's environmentally friendly agenda, requiring corporate environmental performance to be measured, accounted for, and disclosed to learn about company environmental risks, consequences, policies, goals, targets, costs, and liabilities. This study explores how much environmental disclosure practices Indonesian public companies have produced since they are still voluntary and moving forward to mandatory disclosure aligned with regulations issued by financial service authorities. Depth analysis, such as preferred information analysis to disclose, based on environmental-sensitive & non-sensitive companies analysis, and sectoral analysis were additionally investigated. This study attempts to show environmental disclosure practices by Indonesian public companies by gathering quantitative information and analyzing the content of companies' environmental sections in sustainability reports. Over the research period of 2016–2022, the study recorded 756 stand-alone sustainability reports from the companies to explore environmental disclosure trends. The study finds that environmental disclosure practices in Indonesia have fluctuated, with variations in scores yearly. Indonesian public companies mainly prefer to disclose most energy, effluent & waste information. Environmentally sensitive industries perform better on environmental disclosure practices than non-sensitive industries, which presents evidence of the close relationship between environmental disclosure and industry type. Companies in the energy industry have the most outstanding levels of environmental disclosure practices compared to other sectors. Inconsistency in publishing quality indicates that companies can freely determine environmental disclosure, so the government should provide a suitable guideline based on the industry's characteristics so companies can not avoid essential environmental information.

Keywords: Environmental Disclosure, Indonesian Public Companies, Sustainability Reports

K. B. Abiprayu and A. B. Setiawan (eds.), *Proceedings of the International conference of Economics Business and Economics Education Science (ICE-BEES-24)*, Advances in Economics, Business and Management Research 298,
https://doi.org/10.2991/978-94-6463-522-5_29

1 Introduction

Since profit, people, and planet appeared as sustainable concepts with the term of triple bottom line by Elkington (1997) [1], stakeholders demanded the integration of social and environmental values as sustainability principles in business operations, and it has become an international trend [2]. Environmental values, as a notable part of sustainability principles, have been inseparable from Global Reporting Initiative (GRI) reporting guidelines since, in 2011, GRI coined an instrument used by firms globally to structure their sustainability reports [3, 4]. Furthermore, in the modern epoch, over the past decades, the evolution of reporting requested by stakeholders has been more detailed and wanted specific information about companies' operations [5, 6], which includes their impact on the environment. Environmental disclosure has manifested itself as a report to meet the stakeholders' demand for a firm's environmental accountability [7]. As of now, environmental disclosure has mostly been identified as the way that businesses have disclosed information about their environmental operations, including environmental risks, consequences, policies, goals, targets, costs, and liabilities [7]. Corporate environmental disclosure (CED) provides information on companies' awareness and attitude towards environmental-related issues such as emissions, pollution, cleaning up (after pollution), re-landscaping or energy efficiency [8, 9].

As environmental disclosure has become an international trend and has been adopted by various companies in developed and developing countries, Indonesia is no exception in recognizing the importance of this reporting issue. The Indonesian government has been starting to issue some regulations regarding environmental protection for almost a decade. Law No. 19/2003 and Law No. 40/2007 were released to respond to the global trend, which required companies to integrate social and environmental aspects into their operations [2]. Once again, environmental disclosure has been a part of sustainability principles and also included in sustainability reports. Therefore, the Indonesian government has also issued the newest regulation to meet environmental accountability within the concept of sustainability reporting, known as the Financial Services Authority Regulation No. 51/POJK/03/2017 [10]. This regulation was created in the third quarter of 2017 and has prevailed for general banks in books 3 and 4 and foreign banks since 2019. It was extended to medium-sized financial institutions and large public companies in 2020. Then, all public companies, including small to medium-sized ones, should execute this law in 2022. Eventually, as mandated by that law, all Indonesian public companies and financial institutions should start releasing sustainability reports no later than 2024. In other words, from 2022 onward, sustainability reporting has become mandatory for all public companies and should be applied. Align with the journey of sustainability reporting, corporate environmental disclosure (CED) has transformed into required matters.

Thus far, the study of environmental disclosure in Indonesia has concentrated on its relationship with different potential drivers, such as the company's financial performance (for examples profitability [11-14], leverage [15-17]), its relationship to environmental performance [11-13, 18, 19], its relationship to company characteristics (such as firm age [20], and company size [13-16, 21, 22]), its relationship to corporate governance issues (foreign board [23], public ownership [15, 16, 23], institutional and managerial ownership [10, 14], audit commitee [15, 16, 24], independent board [24-26]), and its descriptive analysis related to environmental information within ESG concept [27]. However, no study has explored the evolution of environmental disclosure practices in Indonesia. Exploratory research is greatly needed to know how the environmental journey is required in sustainability concepts, aligning with the transition of sustainability reporting from voluntary to mandatory matter.

This study contributes to the limited literature on environmental disclosure practices with an exploratory view of Indonesian companies. While previous studies in Indonesia have only examined the impact of some determinants on environmental disclosure, this study assesses a different point of view by giving a detailed exploration of environmental disclosure practices. Thus, this paper aims to investigate the current practices of environmental disclosure among companies across all sectors in Indonesia to provide a more comprehensive perspective. For this, the content analysis method was employed for the sustainability report of Indonesian public companies from 2016 to 2022. This study wants to investigate the extent to which Indonesian public companies have prepared environmental disclosure since a year before Financial Services Authority Regulation No. 51/POJK/03/2017 (2016), during a step-by-step applicable journey in 2019 and the end of 2022 when it has become a mandatory matter. In addition, the study will look at how the various overview types—which are based on financial and non-financial companies, environmentally sensitive and non-sensitive companies, and sectoral companies—respond to the OJK legislation regarding environmental disclosure practices.

The rest of this paper is organized as follows. Section 2 covers the supporting theories and briefly overviews the related environmental disclosure in general, international, emerging economies, and the Indonesian context. The demographic and sample, the data collection procedure, and the entire content analysis approach used in this study are all covered in Section 3's methodology section. The primary research findings and interpretations are provided in Section 4. Finally, section 5 explains the theoretical and practical ramifications of the results, conclusion, and recommendations for further study.

2 Literature review

This study employs a multi-theory framework to explain environmental disclosure, incorporating theories such as legitimacy and stakeholder theories [28]. Legitimacy theory suggests that companies must behave responsibly and align their activities with societal norms to meet the expectations of investors and the public, thereby securing legitimacy [29, 30]. As global competition intensifies, organizations encounter significant societal pressure to enhance their environmental accountability through improved performance and public disclosure [7]. Additionally, environmental disclosure is a company's duty to its stakeholders within the stakeholder theory framework. These intersecting theories propose that environmental disclosure is influenced by the corporation's social and political pressures. Poor environmental performers, experiencing greater political and social scrutiny and jeopardized legitimacy, will likely enhance their voluntary environmental disclosures to alter stakeholders' perceptions of their actual performance [31-33].

Over the past two decades, a sustainability reporting concept with economic, social, and environmental aspects has grown in quantity and quality from global perspectives. According to KPMG (2022) [34], 96% of the top 250 companies in the world had reported on sustainability or environmental social governance (ESG) matters. Furthermore, 71% of the top 100 companies by revenue in each 49 countries already identify material ESG topics [34]. These results show that many companies have been aware of the need to publish environmental disclosure separately or included in other related reports [2]. Along with adopting environmental disclosure processes to form an environmentally conscious business future, several perspectives that arise from practices are currently sharply divided.

As Allison-Hope et al., (2018) [35] states in their study, the CSR (corporate social responsibility) committee, also called sustainability teams in other research, often sacrifices the company's strategic direction information to produce sustainability-related reports prioritising stakeholder responses. In this case, companies can lose important information they must disclose in their reports [36]. Furthermore, some companies view detailed environmental information as potentially revealing negative aspects of their operations and threatening their legitimacy and image [37]. On the other hand, Gunawan et al., (2022))[2] and Sen et al., (2011) [7] convey in their article that sustainability reporting, including environmental disclosure, is often unaudited. In this case, an overly optimistic and polished environmental disclosure could be raised to satisfy companies' egos in fulfilling stakeholders' needs [38], which is called greenwashing practices [39]. The diverse opinions in environmental disclosure practices bring the main reason that a similar perspective is crucial in environmental disclosure practices. Critical awareness from companies is essential to take of which replicable processes to increase environmental practices, especially for companies in emerging countries.

Despite the growing differences in perspectives on environmental disclosure practices, awareness of environmental disclosure is still modest in the Indonesian context . With the rising urgency of environmental destruction, climate change, and degradation issues that should bring more attention to companies in Indonesia, the low level of awareness becomes a concern. Possessing one of the planet's most significant biodiversity, Indonesia's rate of ecological loss and the company's ignorance attitude make it crucial to take the government's priority seriously [2]. Several researchers have explored the relationship of environmental disclosure with different potential drivers [11-15], with mixed results. Based on the literature review, no existing studies have examined the progression of environmental disclosure practices in Indonesia over a long period, covering multiple industrial sectors and analyzing the utilization of GRI indicators. This research aims to address the gap in the literature regarding environmental disclosure practices in nations facing diverse environmental and socio-economic disparities while enforcing mandatory sustainability reporting regulations.

3 Method

3.1 Population and sample

The purposive sampling method was employed to select samples from publicly traded companies on the Indonesia Stock Exchange that issue independent sustainability reports. This research utilized a sample of 232 companies drawn from a population of approximately 926 listed corporations at the end of 2023. By selecting all accessible sustainability reports, the study analyzed 767 reports from 2016 to 2022.

3.2 Data collection

Table 1. Number of sustainability reports by Indonesian public companies

Year	Number of pubslihed SR use GRI G4	Number of pubslihed SR use GRI Standard	Total
2016	38	0	38
2017	31	18	49
2018	2	57	59
2019	1	79	80
2020	1	123	124
2021	0	212	212
2022	0	205	205

Number of published SR by each sector

Sector	2016	2017	2018	2019	2020	2021	2022
Basic Materials	6	8	11	14	16	29	25
Consumer Cyclical	0	1	2	4	10	21	23
Consumer Non Cyclical	4	7	9	10	15	27	29
Energy	7	10	11	15	18	32	32
Financials	10	10	10	15	30	31	30
Healthcare	0	1	2	5	7	10	10
Industrials	3	3	3	4	5	11	9
Infrastructure	7	7	7	9	13	20	19
Properties & Real Estate	0	1	1	2	6	19	17
Technology	0	0	0	0	1	1	2
Transportation & Logistic	1	1	2	2	2	6	5

[a] Source: Processed by authors, 2024.

Data for this study were gathered from the firm's sustainability report, obtained from two primary sources: the listed company website and the Indonesian Stock Exchange [40] database. SRs from listed firms are obtained by searching for companies listed on the Indonesia Stock Exchange and then checking their website to determine if they provide stand-alone sustainability reports from 2016 to 2022. Based on availability and accessibility criteria, 767 sustainability reports from 232 companies were gathered for examination. Table 1 shows the entire sustainability reports of Indonesian public firms that were collected each research year.

3.3 Content analysis method

The 756 sustainability reports from 232 companies selected for analysis were examined using a content analysis method. This technique reviews words, meanings, pictures, symbols, codes, concepts, themes, or messages included in published reports [2, 41]. In the context of environmental disclosure, this method has been widely used to analyze non-financial disclosure, assessing how far companies have made disclosures [42]. Unfortunately, despite the effectiveness of this method, the content analysis process includes subjectivity problems based on evaluator capability and knowledge [2]. Therefore, it brings out reliability and validity issues. Inconsistencies in coding may result in unreliable data due to ambiguous coding rules or the incorrect application of numeric codes for categories [43]. To address this issue, Krippendorff (1980) [44] recommended incorporating multiple evaluators in the content analysis process to reduce subjectivity and enhance reliability.

This study adopts and modifies the content analysis processes created by Gunawan (2022) to avoid subjectivity, overcome reliability and validity issues, and suit existing situations. The step of content analysis consists of the following stages:

a. Rater candidate socialization and selection

To expand the possibility of suitable candidates, researchers in this study have socialized on some levels of classes in accounting majors at universities. Researchers explain sustainability disclosure from a wide range of perspectives and then focus on a specific matter, which is environmental disclosure. Moreover, researchers employed some simple posttests to select 21 raters to collect the sustainability report and perform the content analysis of environmental disclosure. Involving numbers of raters have been addressed to reduce subjectivity in content analysis scoring.

b. Briefing and giving assignments to raters

Advanced socialization, briefing, and training have been given to students who are selected as raters to provide capability in scoring the environmental disclosure practices. Advanced socialization was used to increase sustainability and environmental knowledge. Then, the three-step briefings are held to explore the SR guidelines and each item category on the disclosure list, explain several examples of sentences/figures/tables that reflect the disclosure item, and assign the content analysis procedures. Training for almost two hours is used to improve raters' confidence in performing the content analysis process. Eventually, researchers divided selected raters into six teams, consisting of three raters for each team. The content analysis results from three raters were compared to find any differences. After that, the quantitative data evaluation discrepancies were subsequently examined and recalibrated.

c. Supervision and verification

In the content analysis process's quantitative data collecting and evaluation phase, researchers constantly oversee and monitor activities via in-person meetings and mobile communications. Then, addressing the reliability and validity issue, the results of data collection employed two-step verification. The first step adopted the specific verification by Gunawan (2022) [2]. Then, in the second stage, researchers compared the scoring results with their data collection. If any discrepancies are found, the researcher investigates each in-depth report, which has different raters scoring.

This study explores two types of GRI standards for collecting environmental disclosure practices in Indonesian public companies. During the research period, which is from 2016 to 2022, Indonesian public companies have used two types of GRI. In the 2016-2017 research period, most companies used GRI G4 guidelines to create sustainability, but from 2018 onward, the GRI standard has been used by public companies. In this case, researchers facilitate the company disclosure based on their standards. Moreover, the two types of standards that were used can give a comprehensive overview of the evolution of environmental disclosure practices [2, 45, 46]. Environmental disclosure practices in this study are represented by G4-EN1 to G4-EN34 codes in GRI-G4 standard and 301-1 to 308-2 codes in GRI Standards 2018. Researchers employed the weighted scoring methods with a set scale from 0 to 5 score to examine the narrative section of companies' environmental disclosure practices [47]. If the company doesn't disclose certain items (each), it will be given a score of 0. Score 1 for items that are disclosed in less than 3 sentences. Score 2 will be for items that are explained in 3 sentences/1 paragraph up to less than half a page. Then, items that are disclosed at least half a page up to less than 1 page of A4 will score 3. Score 4 will be items disclosed on 1 page of A4. Lastly, environmental items will score 5 if they have excellent information on more than 1 page of A4. The quantitative view can reduce the subjectivity of the scoring process without avoiding the quality of information.

The current study adopts prior research [2] viewpoints to interpret the result of content analysis results. Researchers process and calculate environmental disclosure data using the Excel function. Then, the processed statistical results were modified into scientific graphs [48, 49], which in this study used Microsoft Power BI (Copyright © Microsoft. All Rights Reserved) for visualization.

4 Results and Analysis

4.1 Environmental disclosure practices in Indonesia

Following the completion of the data collection phase, researchers present several tables and graphs to make data interpretation easier and enhance the visualization of trends. Table 1 shows the number of sustainability reports published by each sector each year from 2016 to 2022. The sector with the most published sustainability reports is the financial sector, with 136 reports. Figure 2 presents the trends in environmental disclosure quality and practices in Indonesia, which fluctuate yearly. Moreover, the overall score of environmental disclosure quality by Indonesian public companies reached only 0,249 (24,9%) value in 2017, a high level over the research periods. Companies in Indonesia have modest awareness about environmental disclosure practices and quality. Both companies that disclosed SR with GRI-G4 and GRI Standard have a decreasing trend from 2018 to 2019. The highlighted thing is that while GRI Standards SR in 2016-2022 have constantly increased, the quality of environmental disclosure has decreased in some years. In 2021, 207 SR reports were published by Indonesian public companies, which is an increase of more than 69% from the previous year (2020), but the levels of environmental disclosure decreased by almost 40%. It becomes evident that companies often skip essential information [2, 35]. In other words, companies can freely determine the form and quality of the information. Based on the journey of POJK No.51/POJK.03/2017 to enhance SR from voluntary disclosure (in 2016) into mandatory disclosure (in 2022), the number of published SRs has increased. Still, the value of information, particularly environmental disclosure quality, does not align with these trends. It may caused by the adjustment era for Indonesian public companies.

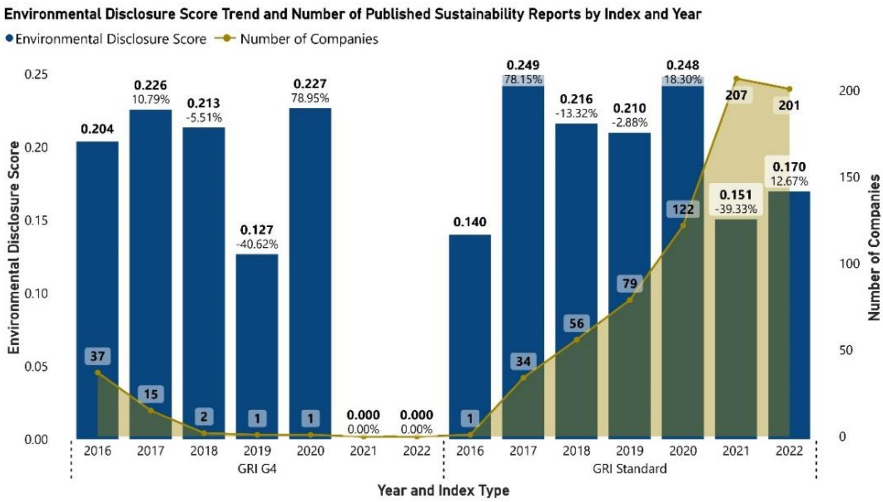

Figure 1. Environmental disclosure score trend and number of published sustainabilty reports by Index and Year

Sources: Processed by the authors.

4.2 Most disclosed environmental disclosure item category in Indonesia

Figures 2 and 3 show the most disclosed item category in the environmental disclosure part in SRs. Figure 2, which presents item categories in the GRI Standard index, shows that energy information has become the preferred information for Indonesian public companies to disclose. Despite the fluctuating trend for the overall item category, energy information stays at a score of over 0.27 (27% of required items) and reaches a high score (0,321 or 32% of needed items in 2018). Besides, the supplier environmental assessment item category, which consists of environmental-related assessments for companies' suppliers, became the least disclosed category compared to other item categories. It may be concluded that companies still do not care about assessing suppliers based on environmental factors [50]. It's reasonable that companies with long contracts with some suppliers or low-cost suppliers still do not have awareness of environmental issues.

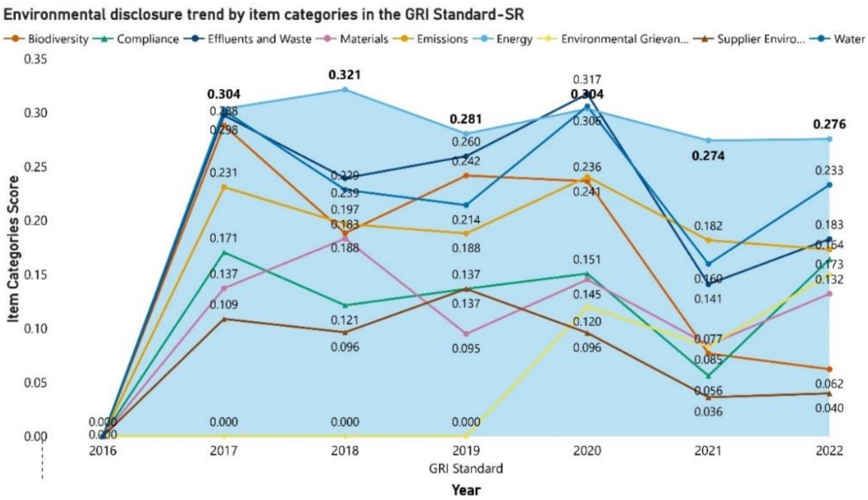

Figure 2. Environmental disclosure trend by item categories in the GRI Standard-SR

Sources: Processed by the authors.

Furthermore, figure 3 shows the most disclosed item category in the GRI-G4 index by Indonesian public companies. Regardless of the fact that the GRI-G4 data is only available from 2016 to 2020 in the current research, it can indicate the preferred information that companies have published. The effluent and waste item category is the preferred information to publish in the companies' environmental disclosure part. Eventually, GRI standards-SR and GRI G4-SR were inconsistent with the preferred environmental information they disclosed. It becomes evident that the same guidelines for disclosing environmental disclosure do not provide a similar perspective on environmental disclosure practices by Indonesian public companies [2, 31, 48].

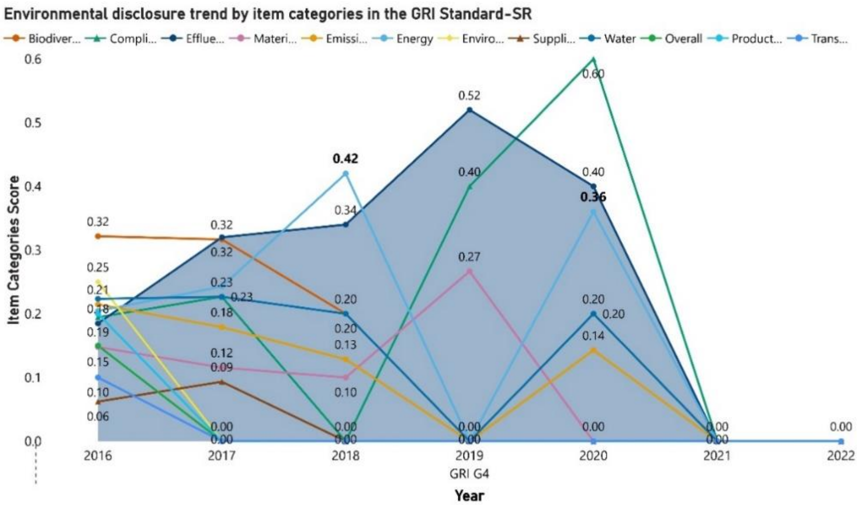

Figure 3. Environmental disclosure trend by item categories in the GRI G4-SR
Sources: Processed by the authors.

4.3 Environmentally sensitive and non-sensitive industry

This section examines environmental disclosure practices by classifying Indonesian public companies into two categories: environmentally sensitive and non-sensitive. This classification is grounded in several theoretical frameworks and prior research studies. The term environmentally sensitive industry consists of industries that contain environmental taboos, moral debate over environmental issues, and political pressure to be responsible for the environment [2, 51]. Those companies are affected by the environment and have an impact on the environment. According to prior studies [51-53], this study classified environmentally sensitive industries consisting of plantation, mining, chemicals & pharmacy, oil and gas, industrial, and basic materials (mineral, metal, automotive, containers & packaging). Figure 4 shows that environmentally sensitive industries have better environmental disclosure practices than non-sensitive industries. It becomes evident that environmentally sensitive industries are aware of the environment due to their close relationship with the environment.

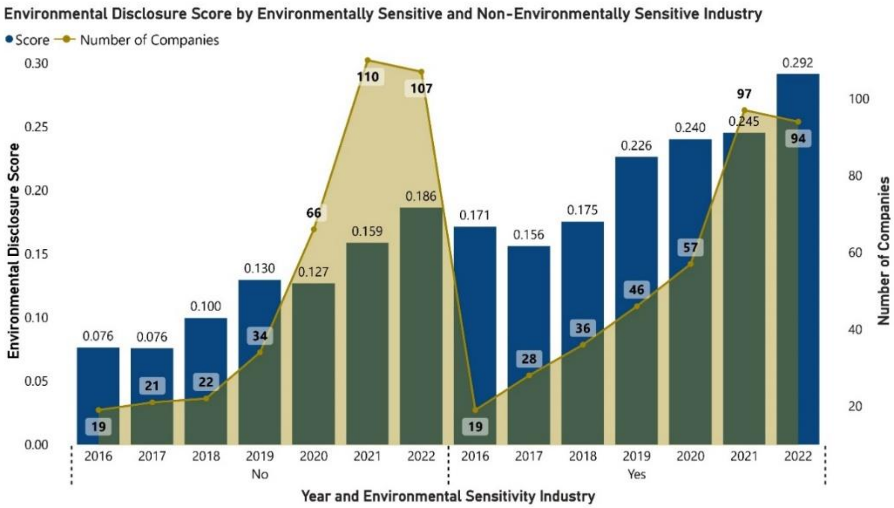

Figure 4. Environmental disclosure trend by environmentally sensitive and non-environmentally sensitive industry

Sources: Processed by the authors.

4.4 Sectoral analysis of environmental disclosure practices

Figure 5 presents the sectoral analysis of environmental disclosure practices in Indonesian public companies. Based on sector classification by IDX, Indonesian public companies have been divided into 12 sectors since 2021: energy, basic materials, consumer non-cyclical, consumer cyclical, properties and real estate, healthcare, transportation and logistics, infrastructure, industrials, financials, technology, and listed investment product. This study has explored 11 sectors in IDX as sample selection has been done. Based on Figure 5, the energy sector possesses the highest level of environmental disclosure practices compared to other industries, with a score of over 0.30 (30% of environmental information has been disclosed). The second is the basic materials sector, with at least over 0.19 and can reach a 0.31 score. Besides, based on Figure 5, the number of companies or published SRs is not aligned with the level of environmental disclosure practices, especially in the financial sector. Even though financial companies have published 136 SRs, their environmental disclosure practices only reach under 0.15 score levels. In some cases, it's reasonable because they do not have a close relationship with the environment [54, 55]. Financial companies may focus on disclosing other sustainability information, such as economic or social information. However, Adu (2022) [54] considers that despite their lack of relationship, financial companies are responsible for environmental protection and disclosure of their point of view in the green finance agenda. Government and financial industry policymakers should facilitate financial companies with specific or partial guidelines for environmental disclosure to make it happen.

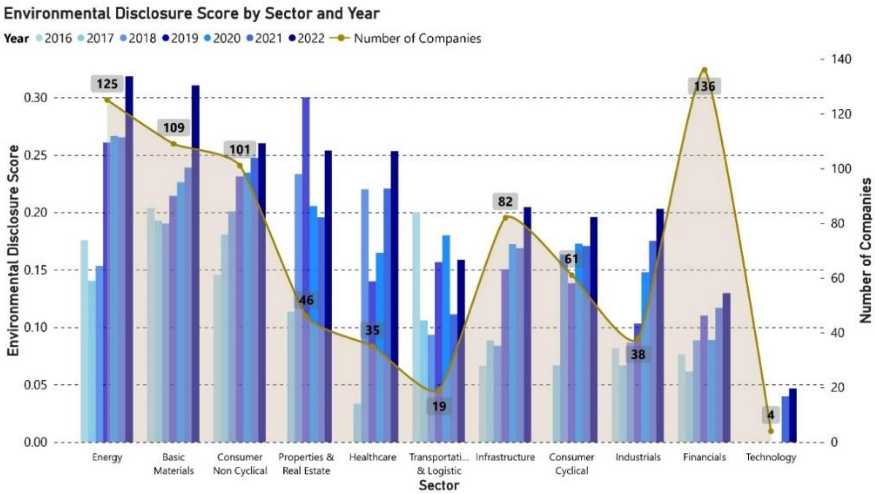

Figure 5. Environmental disclosure trend by sector and year
Sources: Processed by the authors.

5 Conclusions

The study explores the environmental disclosure practices by Indonesian public companies from 2016 to 2022 to provide empirical evidence of how the companies respond and choose preferential forms to environmental issues. According to the environmental section in the sustainability report, the practices of environmental disclosure by Indonesian public companies have fluctuated, with variations in frequency and comprehensiveness from year to year. Inconsistency in publishing quality indicates that companies can freely determine environmental disclosure and strengthen prior opinions about the diverse perspectives within Indonesian public companies in environmental disclosure practices. Then, the most disclosed environmental disclosure item category in GRI-Standard SRs is energy information (302-1 to 302-5) (2016-2022). Besides, in GRI-G4 SRs (2016-2020), the effluent and waste information (G4-EN22 to G4-EN26) is the most preferred category to disclose. Tendency regarding the preferred environmental information to disclose indicates the shift in companies' focus on environmental protection.

Meanwhile, comparing environmentally sensitive and non-environmentally sensitive industries presents evidence of the close relationship between environmental disclosure and their industry type. Environmentally sensitive industries have an inseparable responsibility for environmental protection. Therefore, publishing environmental disclosure was the most feasible and visible way to provide their concern. Besides, this finding might show that the number of SRs may not been aligned with the environmental disclosure practices, which looked at by a significant increase in SRs in non-sensitive industries is not accompanied by the amount of environmental information. This study also showed an in-depth analysis by providing each sector with an exploration of environmental disclosure. Companies in the energy industry have the most outstanding levels of environmental disclosure practices compared to other sectors. However, the technology sector has the lowest environmental disclosure practices. Furthermore, the financial industry has many published SRs but has precisely modest environmental disclosure practices. Financial companies may focus on disclosing other sustainability information, such as economic or social information, without paying attention to essential environmental information.

The findings seem relevant because many Indonesian public companies have different perspectives on environmental disclosure practices. In this case, many companies pretend to disclose SR according to the regulations' requirements without concern for environmental information. Therefore, the government must facilitate a regulation for this issue to force companies to publish minimum levels of environmental disclosure practices and obey the GRI standard. Moreover, the government should provide a suitable guideline based on the industry's characteristics so companies can not avoid essential environmental information.

There are various restrictions on this study. First, content analysis—which is intrinsically subjective and may give rise to issues with validity and reliability—was used in the current research to gather data on sustainability reporting disclosure. To mitigate these issues, we defined boundaries by considering similar meanings of information related to the disclosure list items. Secondly, the data collection process involves numerous individuals and is susceptible to human error. Despite establishing content analysis guidelines to enhance objectivity, the risk of human error remains, particularly given the large volume of data involved. Third, this study has not provided a preferred environmental information analysis based on sector-by-sector or type of industry, whereas the findings can give comprehensive suggestions for the government. Further research must fill this gap on this issue.

Notwithstanding the study's limitations, the findings yielded noteworthy insights. The modest level of environmental disclosure practices until 2022 presents an opportunity and threat for companies to improve their disclosures. Furthermore, environmental concerns are increasingly recognized as the foremost risk to economic stability, necessitating intensified efforts to safeguard the environment. In addition, future studies may utilize this result to create determinants analysis or comparison analysis in depth or wide population (some countries).

6 References

1. Elkington J. Cannibals with Forks. London: Capstone Publishing Limited; 1997.
2. Gunawan J, Permatasari P, Fauzi H. The evolution of sustainability reporting practices in Indonesia. J Clean Prod. 2022;358:131798. doi: 10.1016/j.jclepro.2022.131798.
3. Papa M, Carrassi M, Muserra AL, Wieczorek-Kosmala M. The impact of the EU nonfinancial information directive on environmental disclosure: evidence from Italian environmentally sensitive industries. Meditari Account Res. 2022;30:87–120. doi: 10.1108/MEDAR-01-2021-0884.
4. Zharfpeykan R, Akroyd C. Evaluating the outcome effectiveness of the global reporting initiative transitions. SAMPJ. 2023;14:1101–25. doi: 10.1108/SAMPJ-10-2022-0537.

5. Caputo F, Pizzi S, Ligorio L, Leopizzi R. Enhancing environmental information transparency through corporate social responsibility reporting regulation. Bus Strategy Environ. 2021;30:3470–84. doi: 10.1002/bse.2870.
6. Searcy C, Buslovich R. Corporate perspectives on the development and use of sustainability reports. J Bus Ethics. 2014;121:149–69. doi: 10.1007/s10551-013-1720-6.
7. Sen M, Mukherjee K, Pattanayak JK. Corporate environmental disclosure practices in India. J Appl Account Res. 2011;12:139–56. doi: 10.1108/09675421111154836.
8. Campbell D. Intra-and intersectoral effects in environmental disclosures: evidence for legitimacy theory? Bus Strategy Environ. 2003;12:357–71. doi: 10.1002/bse.359.
9. Nuskiya MNF, Ekanayake A, Beddewela E, Gerged AM. Determinants of corporate environmental disclosures in Sri Lanka: the role of corporate governance. J Account Emerg Econ. 2021;11:367–94. doi: 10.1108/JAEE-11-2020-0291.
10. Wicaksono AP, Kusuma H, Cahaya FR, Rosjidi AA, Rahman A, Rahayu I. Impact of institutional ownership on environmental disclosure in Indonesian companies. Corp Gov Int J Bus Soc. 2024;24:139–54. doi: 10.1108/CG-09-2023-0310.
11. Digdowiseiso K, Subiyanto B, Setioningsih R. What drives environmental disclosure?: evidence from mining companies listed on the Indonesia stock exchange. Int J Energy Econ Policy. 2022;12:32–9. doi: 10.32479/ijeep.13069.
12. Ifada LM, Saleh NM. Environmental performance and environmental disclosure relationship: the moderating effects of environmental cost disclosure in emerging Asian countries. Manag Environ Qual. 2022;33:1553–71. doi: 10.1108/MEQ-01-2022-0026.
13. Solikhah B, Puteri AA, Sarwono E, Ulupui I, Al-Faryan MAS. Improving understanding on determinant of environmental disclosure and moderating effect of corporate governance. Acad Strateg Manag J. 2021;20.
14. Asrori A, Amal MI, Harjanto AP. Company characteristics on the corporate social reporting index of corporate social and environmental disclosure in Indonesian public companies. Int J Energy Econ Policy. 2019;9:481. doi: 10.32479/ijeep.7322.
15. Wahyuningrum IFS, Agustina L, Jati KW, Amal MI, Sriningsih S. A slight look environmental disclosure score trends during Covid-19 outbreak: what's driving the environmental disclosure in Indonesian mining and manufacturing companies. Int J Energy Econ Policy. 2024;14:160–71. doi: 10.32479/ijeep.13765.
16. Ika S, Emilia E, Hasthoro H, Widagdo A. Determinants of environmental disclosure of mining industry near the COVID-19 outbreak: Some Indonesian evidence. IOP Conf Ser Earth Environ Sci. 2023;012041. doi: 10.1088/1755-1315/1009/1/012041.
17. Yaisah U, Hidayah R, Suryandari D, Patrisia D. Environmental disclosure on agricultural and mining sector. IOP Conf Ser Earth Environ Sci. 2021;012012. doi: 10.1088/1755-1315/622/1/012012.
18. Nur T, Panggabean RR. The impact of environmental performance on environmental disclosure, moderated by company characteristics. E3S Web Conf. 2023;01092. doi: 10.1051/e3sconf/202323501092.
19. Kiswanto K, Apriyani ID, Yanto H, Hajawiyah A, Djajadikerta HG. Determinants of environmental disclosure in Indonesia. J Environ Manag. 2020;11:682–91. doi: 10.1016/j.jenvman.2020.110865.
20. Wahyuningrum IFS, Oktavilia S, Putri N, Solikhah B, Djajadikerta H, Tjahjaningsih E. Company financial performance, company characteristics, and environmental disclosure: evidence from Singapore. IOP Conf Ser Earth Environ Sci. 2020;1–7. doi: 10.1088/1755-1315/571/1/012014.

21. Wahyuningrum IFS, Oktavilia S, Setyadharma A, Suryandari D, Netta P, Rahman A. Corporate governance and company characteristics on the quantity of environmental disclosure. E3S Web Conf. 2020;03016. doi: 10.1051/e3sconf/202020303016.
22. Wahyuningrum IFS, Budihardjo MA, Muhammad FI, Djajadikerta H, Trireksani T. Do environmental and financial performances affect environmental disclosures? Evidence from listed companies in Indonesia. Entrep Sustain Issues. 2020;8:1047–61. doi: 10.9770/jesi.2020.8.4(6).
23. Zarefar A, Agustia D, Soewarno N. The role of foreign board and ownership on the quality of sustainability disclosure: the moderating effect of social reputation. Corp Gov Int J Bus Soc. 2024;24:900–18. doi: 10.1108/CG-01-2023-0037.
24. Hidayah R, Yanto H, Laksana PID, Wahyuningrum IFS, Handoyo E. Determinants of environmental disclosure with profitability as an intervening variable. AIP Conference Proceedings. 2023. doi: 10.1063/5.0161184.
25. Pramono AJ, Rusmin R, Astami EW, Brown A. Impacts of family entities on environmental disclosure: Examining the mediating role of earnings management and board independence. Cogent Soc Sci. 2023;9:2261233. doi: 10.1080/23311886.2023.2261233.
26. Trireksani T, Djajadikerta HG. Corporate governance and environmental disclosure in the Indonesian mining industry. 2016.
27. Megawati LR, Pratama A. Sustainable development goals in corporate reporting: Analysis of economic, social, and environmental disclosure (Survey among public listed companies in Indonesia). Int J Energy Econ Policy. 2024;14:625–38. doi: 10.32479/ijeep.13945.
28. Baalouch F, Ayadi SD, Hussainey K. A study of the determinants of environmental disclosure quality: evidence from French listed companies. J Manag Gov. 2019;23:939–71. doi: 10.1007/s10997-018-9444-5.
29. Freedman M, Jaggi B. Global warming, commitment to the Kyoto protocol, and accounting disclosures by the largest global public firms from polluting industries. Int J Account. 2005;40:215–32. doi: 10.1016/j.intacc.2005.01.001.
30. Liao L, Luo L, Tang Q. Gender diversity, board independence, environmental committee and greenhouse gas disclosure. Br Account Rev. 2015;47:409–24. doi: 10.1016/j.bar.2014.12.003.
31. Acar E, Tunca Çalıyurt K, Zengin-Karaibrahimoglu Y. Does ownership type affect environmental disclosure? Int J Clim Change Strateg Manag. 2021;13:120–41. doi: 10.1108/IJCCSM-03-2020-0054.
32. Gregory A, Whittaker J, Yan X. Corporate social performance, competitive advantage, earnings persistence and firm value. J Bus Financ Account. 2016;43:3–30. doi: 10.1111/jbfa.12205.
33. Hahn R, Lülfs R. Legitimizing negative aspects in GRI-oriented sustainability reporting: A qualitative analysis of corporate disclosure strategies. J Bus Ethics. 2014;123:401–20. doi: 10.1007/s10551-013-2002-0.
34. KPMG. Big shifts, small steps: Survey of Sustainability Reporting 2022. 2022.
35. Dunstan A-H, Charlotte B, Jonathan M. Three hot debates in sustainability reporting today. 2018.
36. Sebrina N, Taqwa S, Afriyenti M, Septiari D. Analysis of sustainability reporting quality and corporate social responsibility on companies listed on the Indonesia stock exchange. Cogent Bus Manag. 2023;10:2157975. doi: 10.1080/23311975.2023.2157975.
37. Lv D, Wokutch R. Framing as a strategy for defending the perceived authenticity of voluntary environmental disclosure in the digital era. Corp Soc Responsib Environ Manag. 2024;31:1142–55. doi: 10.1002/csr.2674.

38. Chapman PM. Environmental quality benchmarks—the good, the bad, and the ugly. Environ Sci Pollut Res. 2018;25:3043–6. doi: 10.1007/s11356-018-1166-x.
39. IDX ISE. IDX Yearly Statistics Tahun 2022. Indonesia: Indonesia Stock Exchange; 2023. p. 30–50.
40. Gray R, Kouhy R, Lavers S. Corporate social and environmental reporting. Account Audit Account J. 1995;8:47–77. doi: 10.1108/09513579510146987.
41. Wahyuningrum IFS, Humaira NG, Budihardjo MA, Arumdani IS, Puspita AS, Annisa AN, Sari AM, Djajadikerta HG. Environmental sustainability disclosure in Asian countries: Bibliometric and content analysis. J Clean Prod. 2023;411:137–95. doi: 10.1016/j.jclepro.2023.137095.
42. Guerrero-Baena MD, Castilla-Polo F, Rodríguez-Gutiérrez P. Motivations for social and environmental reporting in Spanish SMEs: An inductive content analysis. Bus Strategy Environ. 2023; n/a. doi: 10.1002/bse.3190.
43. Polizzi S, Scannella E. Corporate environmental disclosure in Europe: the effects of the regulatory environment. J Financ Report Account. 2023; ahead-of-print. doi: 10.1108/JFRA-10-2022-0330.
44. Krippendorff K. Content analysis: An introduction to its methodology. Sage Publications; 2018.
45. Rudyanto A, Siregar SV. The effect of stakeholder pressure and corporate governance on the sustainability report quality. Int J Ethics Syst. 2018;34:233–49. doi: 10.1108/IJOES-03-2017-0033.
46. Sriningsih S, Wahyuningrum IFS. Pengaruh comprehensive stakeholder pressure dan good corporate governance terhadap kualitas sustainability report. Owner: Riset dan Jurnal Akuntansi. 2022;6:813–27.
47. Mintah EO, Gulko N. The impact of the COVID-19 pandemic on social and environmental reporting and financial performance of airlines operating in the UK. J Financ Report Acco. 2023; ahead-of-print. doi: 10.1108/JFRA-01-2023-0001.
48. Akhter F, Hossain MR, Elrehail H, Rehman SU, Almansour B. Environmental disclosures and corporate attributes, from the lens of legitimacy theory: a longitudinal analysis on a developing country. Eur J Manag Bus Econ. 2023;32:342–69. doi: 10.1108/EJMBE-10-2022-0124.
49. Wahyuningrum IFS, Ihlashul'amal M, Utami S, Djajadikerta HG, Sriningsih S. Determinants of carbon emission disclosure and the moderating role of environmental performance. Cogent Bus Manag. 2024;11:2300518. doi: 10.1080/23311975.2024.2300518.
50. Arda OA, Montabon F, Tatoglu E, Golgeci I, Zaim S. Toward a holistic understanding of sustainability in corporations: resource-based view of sustainable supply chain management. Int J Supply Chain Manag. 2023;28:193–208. doi: 10.1108/IJSCM-11-2021-0172.
51. Adu DA. Sustainable banking initiatives, environmental disclosure and financial performance: The moderating impact of corporate governance mechanisms. Bus Strateg Environ. 2022;31:2365–99. doi: 10.1002/bse.3191.
52. Buallay A, Alhalwachi L. Board gender diversity and environmental disclosure: evidence from the banking sector. J Chin Econ Foreign. 2022;15:350–71. doi: 10.1108/JCE-06-2022-0028.