Global Journal of Environmental Science and Management
(GJESM)

SPECIAL ISSUE: Eco-friendly sustainable management
Original Research Paper

Adaptation variation of easiness on environmental, social, and governance components in the selected sustainability developments

F.R., Sutikno[1,2*], N.A. Sasongko[2,3], I.N. Djarot[2], H.S. Dillon[2,3,4]

[1] Urban and Regional Planning Department, Faculty of Engineering, Universitas Brawijaya, Jl. M.T. Haryono, Malang, Indonesia

[2] Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency, Tangerang Selatan, Indonesia

[3] Republic of Indonesia Defense University, Indonesia Peace and Security Centre, Bogor, Indonesia

[4] PT Deloitte Konsultan Indonesia, Jakarta, Indonesia

ARTICLE INFO

ABSTRACT

BACKGROUND AND OBJECTIVES: Environmental, Social, and Governance reporting is universally recognized as a pivotal component embraced by the industry to address climate change and serve as a safeguard to the physical and social environments of society. In the absence of global standards, organizations have developed standardized reporting frameworks for companies. This study provides an adaptation easiness measurement and a wide range of environmental, social, and governance disclosure components extracted from several standards. Multiple standards and a broader range of scaling measurements were used in this study to observe the characteristics of each industry where each environmental, social, and governance component is specific. The objective of this study is to investigate how companies in Indonesia comply with various environmental, social, and governance standards, given the importance of identifying variations of easiness on environmental, social, and governance on sustainability reports.
METHODS: Using multi-source analysis, content analysis, and exploratory data analysis, this study identified whether industries in Indonesia adopt selective patterns in the components included in their sustainability reports.
FINDINGS: This study identified 26 environmental, 8 social, and 23 governance popular components, which are components with high environmental, social, and governance report applicability and company adaptability. The environmental components that is easy to adapt primarily center around formal environmental, social, and governance framework data, in social component revolves around customary practices in corporate social responsibility, and in governance component emphasizes corporate reputation. By employing industry-specific environmental, social, and governance components, this study identifies three distinct groups, enabling the formulation of tailored policies to effectively address the unique needs of each group.
CONCLUSION: This study exposes several findings on how companies in Indonesia adopt different components of environmental, social, and governance reports according to their needs, regulations, and analysis complexity. The novelty of this study combined the use of unified comparison components, a wider range of scaling measurements, and specific environmental social, and governance components per-industry type.

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
49	8	1

Corresponding Author:
Email: fauzulrizal@ub.ac.id
Phone: +62812 1780 499
ORCID: 0000-0001-8908-5183

Note: Discussion period for this manuscript open until April 1, 2024 on GJESM website at the "Show Article".

INTRODUCTION

Sustainability and all its derivatives are the main components of the economic, environmental, and health sectors aimed at addressing the global climate crisis (Adrianto and Sutikno, 2011; Sasongko and Budiarto, 2022; Rodelo-Torrente *et al.,* 2022). Environmental, social, and governance (ESG) reporting is universally recognized as a crucial component embraced by industries to address climate change and act as a guideline for the physical and social environments of society in the long run (Puno *et al.,* 2021; Payus and Sentian, 2022). ESG reporting has significantly improved globally as regulators increasingly emphasize its obligatory implementation and provide financial incentives to companies, while companies are sharing their sustainability responsibilities to increase their accountability (Nicolăescu *et al.,* 2015). In the absence of global standards (Orenstein and Cooke, 2022; Knorringa and Nadvi, 2016), organizations have developed standardized reporting frameworks for companies to use, such as the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), and the Sustainability Accounting Standards Board (SASB). Among these frameworks, GRI is the most widely implemented (Ryszawska and Zabawa, 2018), while TCFD focuses more on governance (Cosma *et al.,* 2022). Each standard has components that reflect their respective perspectives on sustainability. The number of components that need to be met can pose a challenge for companies. Disparities exist between the global South and the global North in fulfillment ESG reporting. Countries in the global North tend to have better ESG compliance due to the different economic climates, corporate awareness of climate change, and regulations than countries in the global South (Daugaard and Ding, 2022). The development of ESG reporting in the global North is driven by a growing awareness of the need to address the global climate crisis and the increasing importance of sustainability in the corporate world (Drei *et al.,* 2019). This increase is further fueled by increasing demand for sustainability from consumers and investors, as well as by the implementation of more regulations and standards to ensure ESG compliance (Arvidsson and Dumay, 2022; Mavlutova *et al.,* 2022). Investments in ESG-focused companies have also increased in the global North, along with the appearance of ESG-based financial products (Hassani

and Bahini, 2022). In the global South, the development of ESG reporting is driven by environmental, social, and economic problems, the emergence of new regulatory frameworks, marketing activities, and the development of new technologies (Ng *et al.,* 2022; Ubeda *et al.,* 2023). ESG reports have become an important tool for meeting the growing demand for accountability from investors, governments, and other stakeholders (Boffo and Patalano, 2020; Signori *et al.,* 2021). Companies in the global South face challenges achieving the same quality of ESG reports as companies in the global North due to less advanced technical resources. In Indonesia, various companies have embraced sustainability reporting. The disclosure of ESG reporting in Indonesia is governed by the financial services authority regulation/ *Peraturan Otoritas Jasa Keuangan* (POJK) number 51/POJK.03/2017, which provides guidelines for financial service institutions, issuers, and public companies to implement sustainable finance and deliver sustainability reports. Additional guidelines on sustainability reports in Indonesia are specified in the financial services authority circular letter/ Surat Edaran Otoritas Jasa Keuangan (SEOJK) number 16/SEOJK.04/2021. These two policies are the Indonesian regulations that govern ESG report applications. Companies in Indonesia are obliged to disclose ESG reports annually. The lack of detailed standards within these regulations compels companies in Indonesia to utilize international ESG standards such as GRI and SASB to generate comprehensive and representative reports (Pranesti *et al.,* 2022). The publication of the sustainability report is mandatory under the regulations mentioned above, but there are no binding standards that companies in Indonesia must comply with. Non-binding standards provide opportunities for regulatory ambivalence by companies (Ashforth *et al.,* 2014). Recent studies have identified the dynamics of regulatory ambivalence caused by inconsistencies, conflicts, or gaps in regulations or standards governing (Lockie *et al.,* 2015), differences in institutional systems and incentives (Agarwal *et al.,* 2014), and centrally formulated regulations (Dillon *et al.,* 2008). Regulatory ambivalence can lead to several issues, such as regulation conflicts between companies (Gilad, 2014), compliance costs, or non-compliance reputational risk (Whelan *et al.,* 2021; Thottoli, 2021), and companies adopting only clear regulations they can understand (Levis, 2006). The lack of regulatory harmonization and standardization in ESG reporting

can lead to misleading claims by companies that use different definitions, criteria, methodologies, or benchmarks for sustainability performance. This can undermine the credibility and comparability of ESG reports and make it harder for investors to make informed decisions (Ioannou and Serafeim, 2017). According to the Corporate Knights ranking, Indonesia ranks 36th globally in implementing ESG standards, lagging behind other ASEAN countries such as Thailand (ranked 9th), Malaysia (22nd), and the Philippines (30th) (Scott, 2023). The reason for better ESG implementation in other countries is the comprehensive backing of the regulator, whereby companies that embrace ESG principles receive various incentives, including tax breaks (Zeng and Jiang, 2023). In European Union countries, companies listed on the European Union stock exchange must disclose ESG factors in their annual reports. In Japan, through Japan Stewardship Code, the government requires companies to disclose ESG information through the sustainable finance agency. In China, the government has obliged sustainability reporting requirements for state-owned enterprises and is expected to expand these requirements to other companies, confirming the binding nature of the guidelines. This study builds on the discussions of the interactions between ESG reports and financial performances, ESG rating, and ESG disclosure practices. The connection between ESG reporting and financial gain has recently received increasing interest from scientists. Clark *et al*. (2015) suggest that corporate sustainability standards reduce capital costs. The concept has broadened recently to include financial capabilities, environmental dedication, and community impact (Hastalona and Sadalia, 2021). It has been found that a favorable ESG score positively influences corporate profitability (Kim and Li, 2021). A research series on ESG ratings highlighted the divergence in assessments. Berger *et al*. (2022) found uncertainty regarding the consistent value of ESG indicators across institutions. In China, local ESG ratings are used, aligning with national policies and conditions (Leng *et al*., 2023). Research in the Czech Republic focuses on specific sectors, establishing key ESG performance indicators for investor decision-making and their integration into sustainability reporting (Kocmanová *et al*., 2012). The ESG report and its disclosure practice have been extensively discussed (Laskar and Maji, 2018). Previous studies have investigated various aspects of ESG

reporting. For example, Yu and Luu (2021), examined a company's ESG disclosure using the Bloomberg ESG disclosure score, Sharma *et al*. (2020) investigated the relationship between financial performance and the extent of ESG disclosure, and Singhania and Saini (2023) examined the influence of institutional frameworks on ESG disclosure practices. Prior research has examined the impact of the ESG report on financial performance, the quality of the ESG report as assessed by institutional ratings, and the factors influencing ESG report disclosure. This study aims to determine to what extent companies decide to apply specific ESG report components and examines how the gray area influenced by non-binding ESG regulations results in different outputs of ESG reports. In light of these objectives, the study question is: how do ESG reports of companies in Indonesia differ? The study hypothesizes that companies in Indonesia adopt selective patterns in including sustainability components in their ESG reports. This study contributes to the literature by providing adaptation easiness measurement and a wide range of ESG disclosure components extracted from several standards. This study is significant for several reasons. First, this study used multiple standards combined as unified comparison components, filling the gap from the previous research that focused on using a single standard. Second, it utilizes a wider range of scaling measurements to identify the ease of adaptation, which was not previously recognized. Third, the study observes the unique characteristics of each industry, where each ESG component is specific and different from previous research using generalized components to all industries. The objective of this study is to investigate how companies in Indonesia comply with various ESG standards, given the importance of identifying variations in environmental, social, and governance aspects in ESG reports. This study was conducted in Indonesia in 2023.

MATERIALS AND METHODS

This study employed three distinct methodologies: multi-source analysis, content analysis, and exploratory data analysis (EDA). The multi-source analysis involves examining and integrating data from multiple sources, such as various standards and regulations (Levitats and Vigoda-Gadot, 2020). Content analysis is a qualitative research technique used to interpret and draw objective, systematic, and quantifiable inferences by
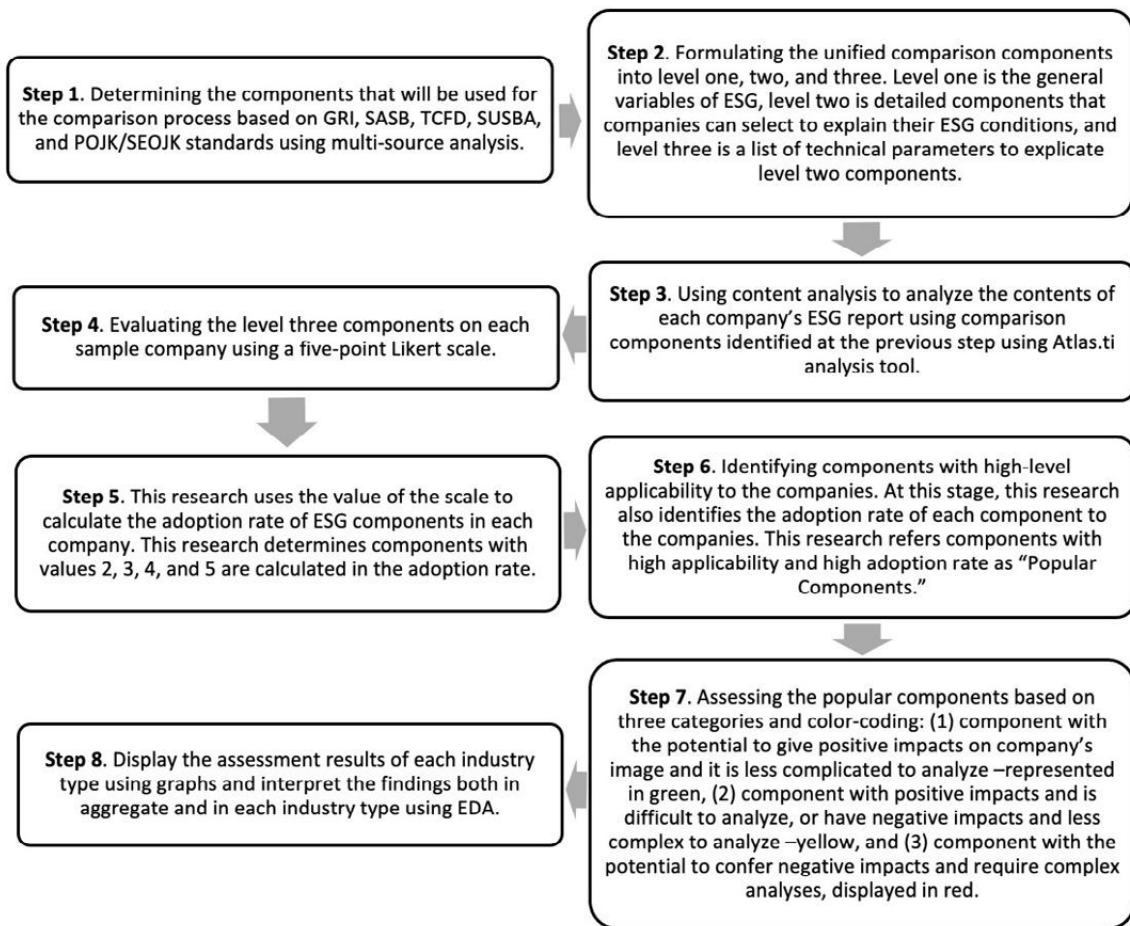
Fig. 1: Study method stages

evaluating textual material, such as reports, against predetermined criteria (Abbot and Monsen, 1979; Daub, 2007; Morhardt *et al*., 2002; Vormedal and Ruud, 2009). EDA is an iterative approach for examining and summarizing data to gain insights and a deeper understanding of its basic characteristics (Arora *et al*., 2021).

There are several analytical steps to identify ESG variations between companies (Fig. 1). First, this study used multi-source analysis (Levitats and Vigoda-Gadot, 2020) to identify unified components derived from international and regional ESG standards. These unified components were then compared with the contents of the ESG reports of each company, necessitating recognition of the general components used in ESG reports. The evaluation of 100 samples of

ESG reports was based on the Kompas100 Index, which is a stock index that comprises 100 public companies traded on the Indonesia Stock Exchange. The selected companies exhibit robust liquidity, substantial market capitalization, and commendable fundamentals and performance within the stock market. Out of the 100 sampled companies categorized by stock index classification, 29 distinct industry types were identified, showcasing favorable characteristics within the Indonesian stock market. The international ESG standards utilized in this study are GRI, SASB, and TCFD. GRI is a globally recognized standard for sustainability reporting framework that uses a set of guidelines and indicators. SASB standards identify ESG issues across 77 industries. TCFD standards are organized into 11 recommended disclosures for
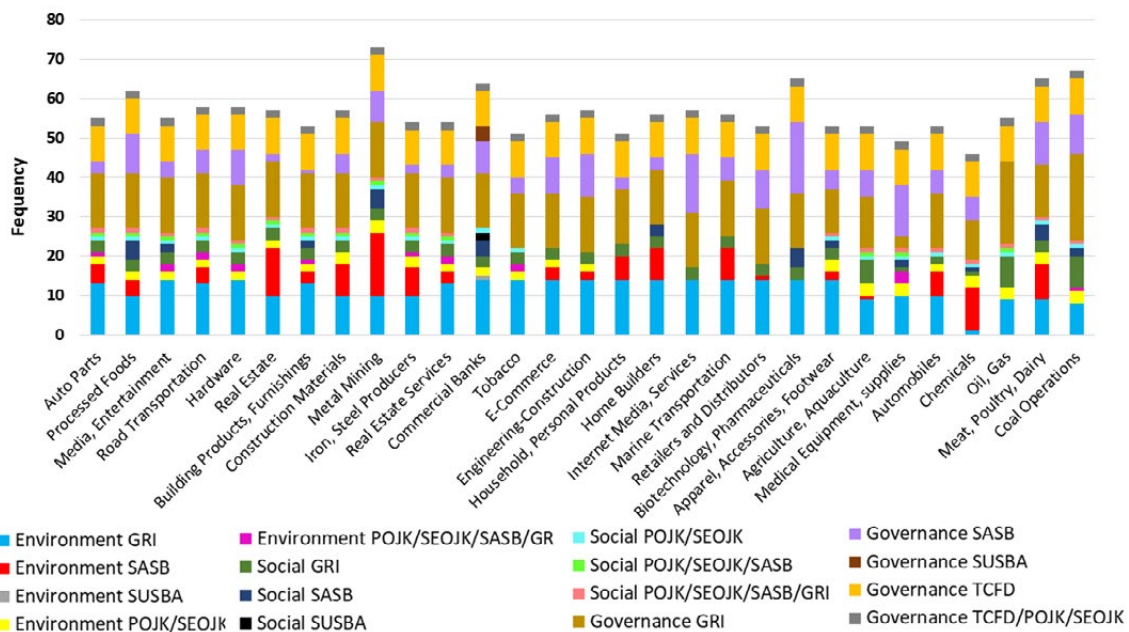
Fig. 2: Distribution of ESG components according to standards

evaluating climate-related risks and opportunities. As for regional ESG standards, this study used POJK and SEOJK, which are Indonesian national guidelines, and Sustainable Banking Assessment (SUSBA), a framework for evaluating environmental and social financial issues in the Asian region. The second step involves formulating the unified comparison components into three levels: level one, two, and three. Each standard has classified its components into environmental, social, and governance categories. Level one component encompasses the general variables identified by each standard, and each general variable consists of multiple detailed components. Level two components are the specific elements that elaborate on the general components. This study identified 109 environmental components, 50 social components, and 212 governance components at level two (Fig. 2). Next, level three components consist a list of technical parameters that must be fulfilled to explicate level two components. There are unified comparison components specific to certain industry types, while several industries can adopt other components. The third step involves content analysis (Morhardt *et al.*, 2002), which analyzes each company's ESG report using comparison components from the previous step. The analysis used codes specified for each

comparison component with the help of the Atlas. ti analysis tool –assisted qualitative data analysis software. After the coding phase, step four used a five-point Likert scale (Joshi *et al.*, 2015) to evaluate the level three ESG components. Scale one suggests that the ESG report does not clarify the comparison components, scale two indicates that the ESG report only partially describes the comparison components, scale three describes the comparison components sufficiently, scale four means the ESG report provides a full description of the comparison components, and scale five indicates a very comprehensive description of the comparison components in the ESG report. The higher the scale value indicates the greater ease of fulfilling the ESG component. This study used the value of this scale to calculate the adoption rate in the next stage. This study determined components with values 2, 3, 4, and 5 calculated in the adoption rate. The fifth step is identifying components with high-level applicability and adoption rates referred to as "Popular Components." Applicability referred to the extent to which a company utilizes a component. For example, an applicability level of 20 percent (%) means that the component can be used by 20% of industry types. The adoption rate referred to the number of companies that include the components in their ESG reports.
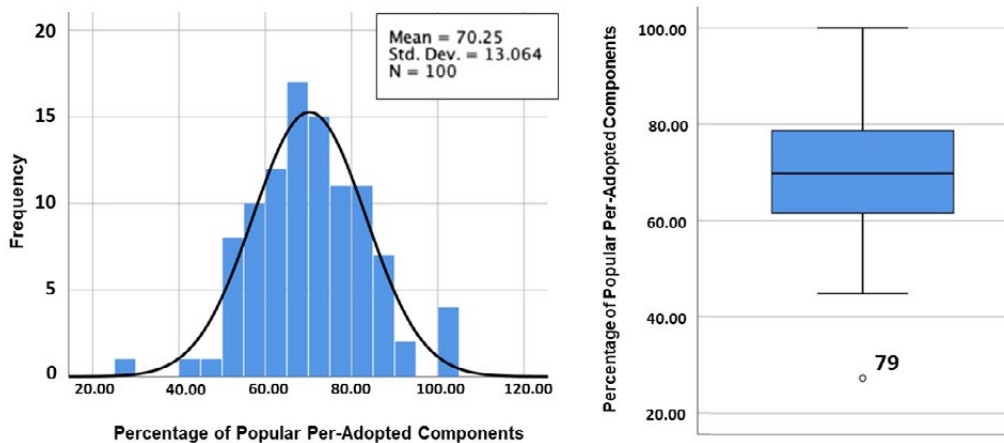
Fig. 3: Distribution of ESG variations

The sixth step is to provide an assessment of popular components based on three categories and color-coded them: 1) has positive impacts on the company's image and less complicated to analyze –represented in green, 2) has positive impacts and difficult to analyze, or has negative impacts and less complex to analyze in yellow, and 3) has the potential to confer negative impacts and require complex analyses, displayed in red. The seventh step is to display the assessment of each industry type using graphs and interpret the findings in EDA (Arora *et al.*, 2021).

FINDINGS AND DISCUSSIONS

Indonesia ESG component variations

This study identified ESG components with high adoption rates and classified degree of easiness in data collection and analysis, color-coded as green, yellow, and red (see step 6 in the methods section). Fig. 4, 5, and 6 present ESG components' applicability (Apl) and adoption rate (Adt). The tables also indicate the origin of standards used for each component, including GRI, SASB, TCFD, POJK, and SEOJK.

This study confirmed the validity of the popular components using a normal distribution (D'Agostino, 2017). The popular components were compared to those adopted in the ESG reports to assess the popular components with high coverage percentages. Fig. 3 shows that the lower quartile of the data has a value of 61.54, with an average value of 70.68. These results indicate that the popular components have sufficient coverage to explain the variations in the ESG

components of Indonesian companies.

This study identified popular ESG components. Popular environmental and social components tend to analyze data that the company acquires from outside its institution or external parties, while popular governance components analyze the company's management and internal data. In terms of environmental and social components (Figs. 4, 5), companies in Indonesia tend to adopt components that fall into the category of positive impact on a company's image with less complexity in analysis (green colored), as well as components with a positive impact but are complicated to analyze, or vice versa (yellow). Out of the 26 popular environmental components, 42.3% fall into the green category, 46.15% are yellow, and 11.54% are classified as red, indicating potential negative impact and complexity in analysis. In the case of social components, both categories are at an equal value of 50%. For governance components (Fig. 6), this study identified that 26.09% of the components have the potential to confer negative impacts and require complex analyses, indicated by the red color-coding. The governance components categorized have the highest number (43.48%), while the components in the yellow category make up 21.74%. This finding reveals that companies adopt easily adaptable components, supporting previous findings (Pranesti *et al.*, 2022) that highlighted companies' application of international ESG standards in generating comprehensive and representative ESG reports. GRI is the most widely adopted standard as a popular component. This finding

GRI **Waste Management** (Waste management for all kinds of non-effluent waste, including hazardous waste) Apl: 20 Adt: 100	**GRI** **Water and Effluents** (Management of water from consumption to become effluent) Apl: 20 Adt: 100	**GRI** **GHG Emission** (GHG emissions resulted from industrial activities and their management) Apl: 20 Adt: 95	**SASB** **Energy Management** (1. Total energy consumed, 2. percentage grid electricity, 3. percentage renewable) Apl: 35 Adt: 88.6
SASB **GHG Emission** (Gross global scope 1 GHG emissions. Regulation, changes from the previous reporting period, calculation methodology, and breakdown of emissions) Apl: 18 Adt: 83.3	**GRI** **Biodiversity** (List of IUCN red list and its preservation management) Apl: 20 Adt: 80	**POJK/SEOJK/GRI** **Environmental Performance** (The amount and intensity of energy used, Energy efficiency efforts and achievements) Apl: 23 Adt: 78	**GRI** **Energy** (Energy consumption within the organization) Apl: 50 Adt: 76
SASB **Water Management** (1. Total water withdrew, 2. Total water consumed, percentage of each in regions with high or extremely high baseline water stress) Apl: 29 Adt: 75.9	**SASB** **GHG Emission** (Discussion of long-term and short-term strategy to manage scope 1 emissions, emissions reduction targets, and performance analysis on those targets) Apl: 18 Adt: 72.2	**POJK/SEOJK/GRI** **Environmental Performance** (Amount and intensity of water used, Water efficiency efforts, and achievements made) Apl: 20 Adt: 70	**GRI** **Energy** (Energy intensity) Apl: 77 Adt: 66
GRI **Water** (Water consumption) Apl: 54 Adt: 64.8	**SASB** **Water Management** (Description of water management risks and discussion of strategies and practices to mitigate those risks) Apl: 19 Adt: 63.2	**GRI** **Emissions** (Gross direct scope 1 GHG emissions. Base year, emission factors source, consolidation approach, standards, methodologies) Apl: 57 Adt: 52.6	**POJK/SEOJK** **Environmental Performance** (Environmental costs) Apl: 85 Adt: 51.7
GRI **Effluents and Waste** (Waste by type and disposal methods) Apl: 73 Adt: 50	**GRI** **Climate Adaptation, Resilience, and Transition** (Economic performance. Organization's public policy development approach and financial implication related to climate change) Apl: 20 Adt: 50	**GRI** **Energy** (Reduction of energy consumption) Apl: 77 Adt: 46.8	**GRI** **Emissions** (Gross location-based energy indirect scope 2 GHG emissions. Base year, emission factors source, consolidation approach, standards, methodologies) Apl: 75 Adt: 44
POJK/SEOJK **Environmental Performance** (Environmentally Friendly Materials) Apl: 85 Adt: 36.5	**GRI** **Emissions** (Reduction of GHG emissions) Apl: 75 Adt: 36	**GRI** **Water** (Interaction with water as a shared resource: water management, water-related impacts, goals and targets) Apl: 64 Adt: 35.9	**POJK/SEOJK** **Environmental Performance** (Complaint aspects related to the environment) Apl: 42 Adt: 35.7
GRI **Effluents and Waste** (Water discharge by quality and destination) Apl: 73 Adt: 35.6	**GRI** **Environmental Compliance** (Non-compliance with environmental laws and regulations) Apl: 79 Adt: 31.6	Positive impact and less complicated to analyze Positive impact but complicated to analyze/negative impact but less complicated to analyze Negative impact and complicated to analyze Apl Component applicability Adt Adoption rate	

Fig. 4: Popular environmental components

confirms the existence of regulatory ambivalence among companies (Ashforth *et al.*, 2014) due to regulatory gaps (Lockie *et al.*, 2015) in the form of non-binding standards.

In aggregate, companies in Indonesia tend to adopt ESG components that have the potential to have positive impacts on their image and are less complicated to analyze (green color-coded). They also tend to adopt components that have positive impacts but are difficult to analyze, or components that have negative impacts but are less complex to analyze (yellow). Based on the distribution of ESG component variations (Table 1), this study identified that the popular environmental and social components mostly fall into the green and yellow categories (Fig. 7). Although some of the popular governance components are red color-coded, indicating the potential for negative impacts and requiring complex analysis, most of the governance components

GRI **Local Communities** (Local communities engagement, impact management, and development program) Apl: 20 Adt: 95	**POJK/SEOJK/ GRI/SASB** **Social Performance** (Employment right fulfillment) Apl: 49 Adt: 89.8	**POJK/SEOJK** **Social Performance** (Commitment of companies to provide equivalent products and/or services to consumers) Apl: 82 Adt: 75.6	**GRI** **Local Communities** (Activities with local community engagement, impact assessments, and development programs) Apl: 73 Adt: 75.34
POJK/SEOJK **Social Performance** (Corporate social responsibility) Apl: 66 Adt: 69.7	**GRI** **Rights of Indigenous Peoples** (List of locations and activities where the company engages with indigenous people) Apl: 20 Adt: 45	**GRI** **Freedom of Association and Collective Bargaining** (Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk) Apl: 78 Adt: 34.6	**GRI** **Local Communities** (Operations with significant actual and potential negative impacts on local communities) Apl: 73 Adt: 31.5

🟩 Positive impact and less complicated to analyze
🟨 Positive impact but complicated to analyze/negative impact but less complicated to analyze
Apl   Component applicability
Adt   Adoption rate

Fig. 5: Popular social components

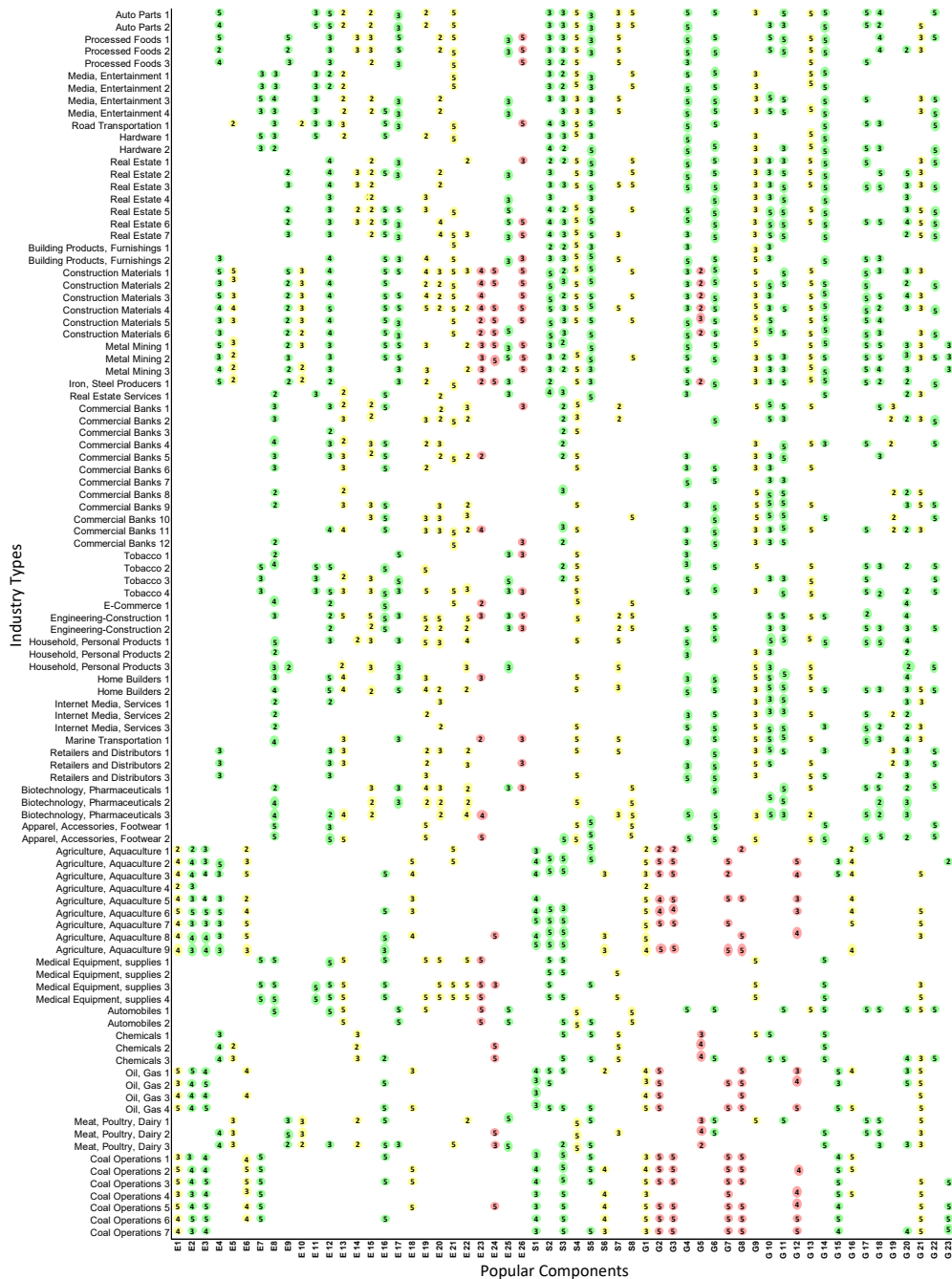|			
GRI **Occupational Health and Safety** (Occupational health and safety cases and its management) Apl: 20 Adt: 100	**GRI** **Forced Labor and Modern Slavery** (Number of forced or compulsory labor) Apl: 20 Adt: 85	**GRI** **Child Labor** (Number of child labor) Apl: 16 Adt: 81.3	**GRI** **Occupational Health and Safety** (Occupational health and safety management system standards) Apl: 70 Adt: 77
SASB **Workforce Health & Safety** (1. Total recordable incident rate 2. Fatality rate for (a) direct employees and (b) contract employees) Apl: 17 Adt: 76.5	**GRI** **Training and Education** (Average hours of training per year per employee) Apl: 76 Adt: 71.0	**GRI** **Freedom of Association and Collective Bargaining** (Freedom of association and collective bargaining) Apl:20 Adt: 70	**GRI** **Non-Discrimination and Equal Opportunity** (Non-discriminative action in company operations) Apl: 20 Adt: 70
GRI **Economic Performance** (Direct economic value generated and distributed) Apl: 80 Adt: 68.8	**GRI** **Employment** (Benefits provided to full-time employees that are not provided to temporary or part-time employees) Apl: 74 Adt: 67.6	**GRI** **Employment** (New employee hires and employee turnover) Apl: 74 Adt: 66.2	**GRI** **Anti-Corruption** (Anti-corruption case and management) 20 Adt: 65
GRI **Occupational Health and Safety** (Occupational health services) Apl: 73 Adt: 61.6	**GRI** **Diversity and Equal Opportunity** (Diversity of governance bodies and employees) Apl: 80 Adt: 60	**GRI** **Employment Practices** (Employment dynamics and rights fulfillment) Apl: 20 Adt: 60	**GRI** **Non-Discrimination and Equal Opportunity** (Diversity and equal opportunity) Apl: 20 Adt: 60
GRI **Occupational Health and Safety** (Worker training on occupational health and safety) Apl: 73 Adt: 52	**GRI** **Occupational Health and Safety** (Hazard identification, risk assessment, and incident investigation) Apl: 73 Adt: 50.7	**SASB** **Data Security** (Description of approach to identifying and addressing data security risks) Apl: 19 Adt: 47.4	**TCFD** **Governance** (Describe management's role in assessing and managing climate-related risks and opportunities) Apl: 100 Adt: 47
TCFD **Metrics and Targets** (Disclosure method for scope 1, scope 2, and, if appropriate, scope 3 GHG emissions) Apl: 100 Adt: 46	**GRI** **Training and Education** (Percentage of employees receiving regular performance and career development reviews) Apl: 76 Adt: 43	**SASB** **Workforce Health & Safety** (1. Mining safety, 2. Fatality rate, 3. Near miss frequency rate 4. Average hours of health, safety, emergency response training for full-time employees and contract employees) Apl: 19 Adt: 42.1	🟩 Positive impact and less complicated to analyze 🟨 Positive impact but complicated to analyze/negative impact but less complicated to analyze 🟥 Negative impact and complicated to analyze Apl Component applicability Adt Adoption rate

Fig. 6: Popular governance components

Table 1: ESG Popular Components

E1: Waste management	**E21**: Environmentally friendly materials	**G5**: Incident and fatality rate
E2: Water and effluents	**E22**: Emissions reduction	**G6**: Hours of training per employee
E3: GHG emissions	**E23**: Interaction with water as a shared resource	**G7**: Freedom of association
E4: Energy management		**G8**: Non-discrimination actions
E5: GHG emission-scope 1, regulation and methodology	**E24**: Complaint aspects related to the environment	**G9**: Economic performance
E6: Biodiversity	**E25**: Effluents and waste-water discharge by quality and destination	**G10**: Benefits for employee
E7: Environmental performance on energy		**G11**: New employee hires and turnover
E8: Energy consumption	**E26**: Environmental compliance	**G12**: Anti-corruption
E9: Water management-withdraw and consumption in areas with water stress	**S1**: Local community engagements	**G13**: Occupational health services
	S2: Employment right fulfillment	**G14**: Diversity of governance bodies and employees
E10: GHG emission-scope 1, strategy, target, and performance	**S3**: Equivalent products and services	**G15**: Employment practices
	S4: Local community activities	**G16**: Non-discrimination and diversity
E11: Environmental performance on the water	**S5**: Corporate social responsibility	**G17**: Worker training on occupational health and safety
E12: Energy intensity	**S6**: Rights of indigenous peoples	
E13: Water consumption	**S7**: Freedom of Association and collective bargaining	**G18**: Hazard identification, risk assessment, and incident investigation
E14: Water management risk		**G19**: Data security
E15: Emissions-GHG scope 1, emissions source, consolidation, and standards	**S8**: Potential negative impacts on local communities	**G20**: Management for climate-related issues
E16: Environmental cost	**G1**: Occupational health and safety cases and their management	**G21**: Metrics and targets
E17: Effluents and waste-by type and disposal	**G2**: Forced labor and modern slavery	**G22**: Percentage of performance development reviews
	G3: Child labor	**G23**: Mining incident and fatality rate
E18: Climate adaptation, resilience, and transition	**G4**: Occupational health and safety management system standards	
E19: Energy reduction		
E20: Emissions-GHG scope 2, emissions source, consolidation, and standards		

still fall into the green and yellow categories. This study identified ESG components with easy adaptation levels by considering the number of companies that scored five on the Likert scales for certain components. The environmental components that companies easily adapt include GHG emissions, environmental performance on energy, environmental cost, environmentally friendly materials, and complaint aspects related to the environment. These four environmental components that are easily adapted by companies are identified from national regulations (POJK and SEOJK). This finding aligns with the results of Singhania and Saini (2023), emphasizing the significance of the ESG framework and highlighting the importance of the ease of the ESG framework as a crucial element in preparing ESG reporting. The social components that companies easily adopt include employment rights fulfillment, activities with local community engagement, corporate social responsibility, and operations with significant actual and potential negative impact on the local community. These easy-adapted social components correlate significantly with the company's practices toward the community, with three out of the four components focusing on social engagement and social impact. The governance components easily adapted by companies include forced labor and modern slavery, child labor, freedom of association, non-discrimination actions, and occupational health services. Four out of the five components pose a risk to the company's reputation. Despite being categorized as risky components, companies perceive them as easily adaptable because the data associated with these components, counterintuitively, contributes to enhancing their reputation. This finding offers a new perspective on reputational risk (Whelan *et al*., 2021; Thottoli, 2021). There are key differences in the ease of adaptation among the ESG components. The environmental component primarily relies on formal ESG framework data, the social component revolves around customary practices in corporate social responsibility, and the governance component emphasizes corporate reputation.

Fig. 7: Distribution of ESG component variations

ESG component variations per-industry

After analyzing 29 types of industries, this study found that each industry type typically prioritizes the use of ESG components that have a positive impact and are less complicated to analyze. Fig. 8 identified three distinct company categories for adopting ESG components.

The first group tends to adopt relatively less
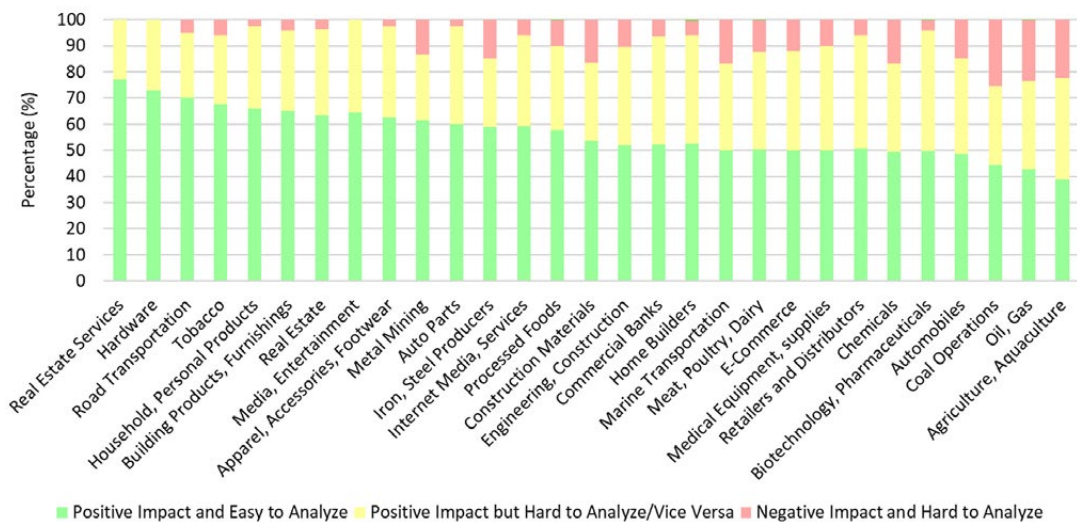
Fig. 8: ESG components between industry types

complicated ESG components, as indicated by the high proportion of green bars. Industries falling into this category include real estate services, hardware, road transportation, tobacco, household and personal products, building products and furnishings, media and entertainment, real estate; apparel, accessories, footwear; metal mining; and auto parts. The second group of industries uses more manageable ESG components. These industries used components with medium (yellow) and high difficulty levels (red) to comply with industry regulations from various sectorial authorities. For example, the chemical industry must adhere to indicators set forth by the American Chemistry Council regarding operational safety, emergency preparedness, and response. Industries in this category include iron and steel producers, internet media services, processed foods, construction materials, engineering and construction, commercial banks, home building, marine transportation, meat, poultry, dairy, e-commerce, medical equipment and supplies, retailers and distributors, chemicals, biotechnology, pharmaceuticals, and automobiles. In the third and final group, industries are mandated by standards to disclose and implement more advanced and comprehensive ESG components. Industries in this category tend to adopt the GRI standard, which includes comprehensive assessment components. Industries operating within coal operations, oil and gas, and agriculture and aquaculture fall into this category.

The findings confirm that by utilizing industry-specific ESG components, it is possible to identify distinct groups of industries in Indonesia. These distinct groups can serve as the basis for formulating tailored policies to address the unique needs of each group.

CONCLUSIONS

This study confirms that companies in Indonesia selectively adopt sustainability components in their ESG reports, primarily focusing on easily disclosed ESG components. The study contributes to the literature by providing a measurement of adaptation and a wide range of ESG disclosure components extracted from various standards. Multiple standards were combined as unified comparison components, and scaling measurements were used to identify the ease of adaptation, applying specific ESG components for each industry characteristic. Unified components were derived from international and regional ESG standards and were used to analyze companies' ESG reports. The study identified 109 environmental components, 50 social components, and 212 governance unified components. Through EDA on the unified components, the study identified 26 environmental, 8 social, and 23 governance popular ESG components based on their high applicability and adoption rates. These popular components were categorized into three distinct categories, differentiating them according to their impacts on image and analysis difficulty. Indonesian

companies prioritize ESG components with a positive impact that are less complex to analyze. Using the Likert scale in content analysis, this study identified ESG components with an easy adaptation level. The study confirms that the characteristics of easily adaptable components underscore the significance of the ESG framework for environmental components, establish a strong correlation between adaptability and company practices toward the community for social components, and emphasize governance components that contribute to enhancing company reputation. The findings confirms that utilizing industry-specific ESG components enables the identification of distinct groups of industries in Indonesia, which can serve as the basis for formulating tailored policies to address the unique needs of each group. The popular components identified in this study can serve as a foundation for ESG report regulations in Indonesia.

AUTHOR CONTRIBUTIONS

ACKNOWLEDGEMENT

CONFLICT OF INTEREST

OPEN ACCESS

PUBLISHER'S NOTE

ABBREVIATIONS

%	Percent
Adt	Adoption rate
Apl	Component applicability
ASEAN	Association of southeast asian nations
EDA	Exploratory data analysis
ESG	Environment, social, governance
GHG	Greenhouse gas
GRI	Global reporting initiative
IUCN	International union for conservation of nature
NMFR	Near miss frequency rate
N	Number of data
OJK	Otoritas jasa keuangan/financial services authority
POJK	Peraturan otoritas jasa keuangan/financial services authority regulation
SASB	Sustainability accounting standards board
SEOJK	Surat edaran otoritas jasa keuangan/financial services authority circular letter
Std. Dev.	Standard deviation
SUSBA	Sustainable banking assessment
TCFD	Task force on climate-related financial disclosures

REFERENCES

Abbot, W.; Monsen, R., (1979). On the measurement of corporate social responsibility: self-reported disclosures as a method of measuring corporate social involvement. Acad. Manage. J., 22(3): 501–515 (**15 pages**).

Adrianto, D.W.; Sutikno, F.R., (2011). Environmental decision making to support the sustainable development planning. J. Appl. Sci. Res., 7(6): 741–747 (**7 pages**).

Agarwal, S.; David, L.; Seru, A.; Trebbi, F., (2014). Inconsistent regulators: evidence from banking. Q. J. Econ., 129(2): 889–938 (**50 pages**).

Arora, A.S.; Rajput, H.; Changotra, R., (2021). Current perspective of COVID-19 spread across South Korea: exploratory data analysis and containment of the pandemic. Environ. Dev. Sustainability. 23(5): 6553–6563 (**11 pages**).

Arvidsson, S.; Dumay, J., (2022). Corporate ESG reporting quantity, quality and performance: Where to now for environmental policy and practice? Bus. Strategy Environ., 31(3): 1091–1110 (**20 pages**).

Ashforth, B.E.; Rogers, K.M.; Pratt, M.G.; Pradies, C., (2014). Ambivalence in organizations : A multilevel approach. Organ. Sci., 25(5): 1453–1478 (**26 pages**).

Berg, F.; Kolbel, J.; Rigobon, R., (2019). Aggregate Confusion: The Divergence of ESG Ratings. SSRN Electronic J., 26: 1315–1344 (**30 pages**).

Boffo, R.; Patalano, R., (2020). ESG investing : Practices, progress and challenges. OECD (**88 pages**).

Clark, G.L.; Feiner, A.; Viehs, M., (2015). From the Stockholder to the Stakeholder How Sustainability Can Drive Financial Outperformance.

Cosma, S.; Principale, S.; Venturelli, A., (2022). Sustainable governance and climate-change disclosure in European banking: The role of the corporate social responsibility committee. Corporate Governance. Int. J. Bus. Soc., 22(6): 1345-1368 (**23 pages**).

D'Agostino, R. B., (2017). Tests for the normal distribution in *Goodness-of-fit techniques*. Routledge, pp. 367–420 (**54 pages**).

Daub, C.H., (2007). Assessing the quality of sustainability reporting: An alternative methodological approach. J. Cleaner Prod., 15(1): 75–85 (**11 pages**).

Daugaard, D.; Ding, A., (2022). Global drivers for ESG performance: The body of knowledge. Sustainability. 14(4): 1–21 (**21 pages**).

Dillon, H.S.; Laan, T., (2008). Biofuels at what cost? government support for ethanol and biodiesel in Indonesia. Global Subsidies Initiative., IISD (**86 pages**).

Drei, A.; Mortier, V.; Roncalli, T.; Sekine, T., (2019). ESG investing in recent years: New insights from old challenges. 1–23 (**23 pages**).

Gilad, S. (2014). Beyond endogeneity: How firms and regulators co-construct the meaning of regulation. Law Policy. 36(2): 134–164 (**31 pages**).

Hassani, B. K.; Bahini, Y., (2022). Relationships between ESG disclosure and economic growth: A critical review. J. Risk Finance Manage., 15(11): 538 (**23 pages**).

Hastalona, D.; Sadalia, I., (2021). Literature Review ESG and Sustainability Finance. Budapest International Research and Critics Institute (BIRCI-Journal): Hum. Soc. Sci., 4(3): 3548–3557 (**9 pages**).

Ioannou, I.; Serafeim, G., (2017). The consequences of mandatory corporate sustainability reporting. Harvard Bus. School Res. Working Pap., 11-100 (**90 pages**).

Joshi, A.; Kale, S.; Chandel, S.; Pal, D. K., (2015). Likert scale: Explored and explained. Br. J. Appl. Sci. Technol., Sciencedomain Int., 7(4), p. 396-403 (**8 pages**).

Kim, S.; Li, Z., (2021). Understanding the impact of esg practices in corporate finance. Sustainability. 13(7): 1–15 (**16 pages**).

Knorringa, P.; Nadvi, K., (2016). Rising power clusters and the challenges of local and global standards. J. Bus. Ethics. 133: 55–72 (**18 pages**).

Kocmanova, A.; Nemecek, P.; Docekalova, M., (2012). Environmental, Social and Governance (ESG) Key Perform. Indic. Sustainable Rep., 655–662 (**8 pages**).

Laskar, N.; Gopal Maji, S., (2018). Disclosure of corporate sustainability performance and firm performance in Asia. Asian Rev. Accounting, 26(4): 414–443 (**30 pages).**

Leng, A.; Yang, X.; Jin, Z.; Cheng, F.; Zhang, Z.; Li, J.; Mo, Y., Li, Y. (2023). Research on the localized ESG rating system based on China's national policy construction. ICHCI. SPIE, 12509: 161-166 (**6 pages**).

Levis, J., (2006). Adoption of corporate social responsibility codes by multinational companies. J. Asian Econ., 17(1): 50–55 (**6 pages**).

Levitats, Z.; Vigoda-Gadot, E., (2020). Emotionally engaged civil servants: Toward a multilevel theory and multisource analysis in public administration. Rev. Public Personnel Administration. 40(3): 426–446 (**21 pages**).

Lockie, S.; Travero, J.; Tennent, R., (2015). Private food standards, regulatory gaps and plantation agriculture: Social and environmental (ir) responsibility in the Philippine export banana industry. J. Cleaner Prod., 107: 122–129 (**8 pages**).

Mavlutova, I.; Fomins, A.; Spilbergs, A.; Atstaja, D.; Brizga, J., (2022). Opportunities to increase financial well-being by investing in environmental, social and governance with respect to improving financial literacy under covid-19: The case of Latvia. Sustainability. 14(1) (**25 pages**).

Morhardt, J.E.; Baird, S.; Freeman, K., (2002). Environmental and sustainability reports and other criteria. Corporate Soc. Responsibility Manage., 9: 215–233 (**19 pages**).

Ng, A.W.; Yorke, S.M.; Nathwani, J., (2022). Enforcing double materiality in global sustainability reporting for developing economies: Reflection on Ghana's oil exploration and mining sectors. Sustainability. 14(16) (**22 pages**).

Nicolăescu, E.; Alpopi, C.; Zaharia, C., (2015). Measuring corporate sustainability performance. Sustainability. 7(1): 851–865 (**15 pages**).

Orenstein, M.; Cooke, B., (2022). ESG, why should governments care and what can governments do? Canada West Foundation (**40 pages**).

Payus, C.M.; Sentian, J. (2022). Satellite imagery system in malaria transmission resulting from the land use/ land cover change. Global J. Environ. Sci. Manage., 8(4): 545-560 (**16 pages**).

Pranesti, A., Larasati, K.S.; Widiyanti, A., (2022). Kinerja keterlanjutan dan nilai perusahaan: Sebuah kajian teoritis., Jurnal Ilmiah Universitas Batanghari Jambi. 22(3): 1624–1631 (**8 pages**).

Puno, G.R.; Puno, R.C.C.; Maghuyop, I.V., (2021). Two-dimensional flood model for risk exposure analysis of land use/land cover in a watershed. Global J. Environ. Sci. Manage., 7(2): 225-238 (**14 pages)**.

Rodelo-Torrente, S.; Torregroza-Espinosa, A.C.; Moreno Pallares, M.; Pinto Osorio, D.; Corrales Paternina, A.; Echeverría-González, A., (2022). Soil fertility in agricultural production units of tropical areas. Global J. Environ. Sci. Manage., 8(3): 403-418 (**16 pages)**.

Ryszawska, B.; Zabawa, J., (2018). The environmental responsibility of the world's largest banks. Econ. Bus., 32(1): 51–64 (**14 pages**).

Sasongko, N.A.; Budiarto, R., (2022). Economic impact. In Surani, A.; Gozan, M.; Ibrahim, M.F.; Phang, Lai-Yee., Biorefinery of oil producing plants for value-added products, Volume II, First Edition (**26 pages**).

Scott, M., (2023). 100 most sustainable companies of 2023 still flourishing in tumultuous times.

Sharma, P.; Panday, P.; Dangwal, R. C., (2020). Determinants of environmental, social and corporate governance (ESG) disclosure: a study of Indian companies. Int. J. Disclosure Governance, 17(4): 208–217 (**9 pages**).

Signori, S.; San-Jose, L.; Retolaza, J.L.; Rusconi, G., (2021). Stakeholder value creation: Comparing ESG and value added in european companies. Sustainability. 13(3): 1–16 (**16 pages**).

Singhania, M.; Saini, N., (2023). Institutional framework of ESG disclosures: comparative analysis of developed and developing countries. J. Sustainable Financ. Investment. 13(1), 516–559 (**44 pages**).

Thottoli, M.M., (2021). The relevance of compliance audit on companies' compliance with disclosure guidelines of financial statements. J. Investment Compliance. 22(2): 137–150 (**14 pages**).

Ubeda, F.; Mendez, A.; Forcadell, F.J., (2023). Sustainable banking and financial inclusion in the global South: The "S" in ESG', 2(1): 6–11 (**6 pages**).

Vormedal, I.H.; Ruud, A., (2009). Sustainability reporting in Norway - an assessment of performance in the context of legal demands and socio-political drivers. Bus. Strategy Environ., 18(4): 207–222 (**26 pages**).

Whelan, T.; Atz, U.; Van Holt, T.; Clark, C., (2021). ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015-2020. NYU: STERN Report (**19 pages**).

Zeng, L.; Jiang, X., (2023). ESG and corporate performance: Evidence from agriculture and forestry listed companies. Sustainability. 15(8): 6723 (**18 pages**).

Yu, E. P. Yi.; Luu, B. Van., (2021). International variations in ESG disclosure – Do cross-listed companies care more? Int. Rev. Financ. Anal., 75: 1–14 (**14 pages**).

AUTHOR (S) BIOSKETCHES

Sutikno, F.R., Ph.D., Assistant Professor, [1]Urban and Regional Planning Department, Faculty of Engineering, Universitas Brawijaya, Jl. M.T. Haryono No. 167, Malang, Indonesia. [2]Visiting Researcher, Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency (BRIN), Tangerang Selatan, Indonesia.
▪ Email: *fauzulrizal@ub.ac.id*
▪ ORCID: 0000-0001-8908-5183
▪ Web of Science ResearcherID: NA
▪ Scopus Author ID: 43462014800
▪ Homepage: https://pwk.ub.ac.id/blog/team/fauzul-rizal-sutikno-st-mt-ph-d/

Sasongko, N.A., Ph.D., Director, [1]Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency (BRIN), Tangerang Selatan, Indonesia. [2]Associate Professor, Republic of Indonesia Defense University (UNHAN), Indonesia Peace and Security Centre, Bogor, Indonesia
▪ Email: *nugroho.adi.sasongko@brin.go.id*
▪ ORCID: 0000-0002-6546-1348
▪ Web of Science ResearcherID: NA
▪ Scopus Author ID: 56709544200
▪ Homepage: https://www.linkedin.com/in/nugroho-adi-sasongko-94558ab9/

Djarot, I.N., Ph.D., Researcher, Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency (BRIN), Tangerang Selatan, Indonesia.
▪ Email: *iran001@brin.go.id*
▪ ORCID: 0000-0002-5986-8934
▪ Web of Science ResearcherID: NA
▪ Scopus Author ID: 57215343961
▪ Homepage: https://biotek.uai.ac.id/ir-ira-nurhayati-djarot-m-sc-ph-d/

Dillon, H.S., Ph.D., [1]Visiting Researcher, Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency (BRIN), Tangerang Selatan, Indonesia. [2]Lecturer, Republic of Indonesia Defense University (UNHAN), Indonesia Peace and Security Centre, Bogor, Indonesia. [3]Director, PT. Deloitte Konsultan Indonesia, The Plaza Office Tower, Jakarta, Indonesia.
▪ Email: *hdillon@uci.edu*
▪ ORCID: 0000-0001-7826-2068
▪ Web of Science ResearcherID: NA
▪ Scopus Author ID: 57198007792
▪ Homepage: https://www.linkedin.com/in/harya-s-dillon-91451117