The impact of Carbon Emissions Disclosure, Good Corporate Governance, and Media Disclosure on Investor Reaction

Siti Fajriati Ramadhani¹, Bayu Tri Cahya², Tri Irawati³, Lukman Hamdani⁴, Abdul Latif Dwi Cahyo⁵

¹². IAIN Kudus,³ STMIK Sinar Nusantara Surakarta,⁴ YARSI University
⁵Master of Sharia Economics IAIN KUDUS
*Corresponding author e-mail: bayu_cahya@iainkudus.ac.id.

Article Info

Abstract
This research aims to determine the influence of Carbon emission Disclosure, Good Corporate Governance, and Media Exposure on investor reactions. The population used is energy companies listed on the Indonesian Sharia Stock Index for 2021-2022. The number of samples in the study was 70, using the purposive sampling method. Meanwhile, the research data used is secondary data in the form of annual reports obtained from the IDX and issuer websites. The analytical method used is multiple linear regression analysis. The research results show that disclosure of carbon emissions significantly negatively affects investor reactions. This is because there is still very little socialization from the company regarding operational activities in the environment towards the community as shareholders. Meanwhile, Good Corporate Governance and Media exposure significantly affect investor reactions.

Keywords:
Investor Reaction;
Carbon Emission Disclosure;
Good Corporate Governance;
Media exposure

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1. Introduction
Companies need a large percentage of funds for long-term funding sources, so one of the activities carried out is issuing shares through the capital market (Widagdo, 2019). Investors need comprehensive information in their investment decision-making process to optimize their expected investment returns. The required information includes financial and non-financial aspects, including information related to environmental responsibility (Asyari & Hernawati, 2023). Investors play an important role in the success of the company. The reaction of investors will always be a consideration in the decisions taken by the company regarding the implementation of corporate social responsibility, whereas rational investors will always consider the level of risk and the expected profit potential of each security in the theoretical framework, the level of risk and the expected return have a comparable relationship (directly proportional) (Muchti & Widyaningsih, 2014).

Investor reaction is the response that arises when the company announces information, both in the form of good news and bad news, which results in significant changes in stock prices at the time of earnings announcement, where a large enough difference occurs between actual returns and investor expectations (Rettob, 2016). The Annual Report and financial events are part of the accounting information made by the company's management as a form of accountability to the company's internal parties and as a guide for the company's external parties. Annual reports that contain the impact on the environment of their operational activities will be considered by investors as good disclosure, in other words, "good news" for the company because it cares about the environment (Julansa et al., 2020). Efforts to reduce climate change depend highly on the commitment of the main parties that contribute to emissions or issuers. Lowering human-generated carbon dioxide emissions will require serious and deeply intertwined economic and social

transitions at the macro and micro levels. The State of Indonesia has made several steps by making policies to reduce carbon emissions in the Kyoto Protocol through Law Number 17 of 2004 (Law No. 17 Year 2004 on Climate Change). Establishing the Kyoto Protocol policy initiated Indonesia’s implementation of carbon accounting. This green investment in the environment requires companies to recognize, calculate, present, and disclose carbon emissions.

When making investment decisions, investors pay enough attention to aspects of good corporate governance. Good Corporate Governance (GCG) can improve management performance by controlling manager behavior so that manager behavior can be accounted for by all parties with an interest in the company (Agustin & Sudaryanti, 2021). Research conducted by He et al. in 2021 in China found an ongoing debate regarding female directors in corporate governance (He et al., 2021). Good corporate governance can control all company performance properly and maintain relationships with external parties, namely stakeholders, in order to maintain company value like the research by Kamila and Christina, who used Media Exposure as a Moderating variable that connects Green Strategy and Investment with Carbon Emissions Disclosure (Ramadhani & Astuti, 2023). One factor that can moderate the relationship between carbon emission disclosure, good corporate governance, green investment, and investor reactions is media exposure. Media exposure can strengthen or weaken investors' perceptions of the company. In this study, media exposure is an independent variable that tests whether media exposure is very closely related to investor reactions. Media exposure variables are measured using dummy variables, namely, if the company provides information through various media such as sustainability reports, websites, and newsletters. Events or news related to the environment, sustainability, or company actions can quickly go viral and influence investment decisions.

Increased awareness of climate change and sustainability has prompted companies to pay more attention to their environmental impacts. Carbon emission disclosure has become important to corporate social responsibility (CSR) and corporate financial reporting. In addition, Good Corporate Governance practices are increasingly recognized as an important factor in determining company performance. All of these factors can influence investors' reactions to companies. Therefore, this study investigates the effect of carbon emission disclosure, good corporate governance, and media exposure on investor reactions. Events or news about the environment, sustainability, or corporate actions can quickly go viral and influence investment decisions.

**Stakeholder Theory**

Environmentally oriented research and corporate governance do not escape the existence of stakeholders, including investors. Stakeholder theory suggests that a company functions for its benefit and is obliged to provide benefits to all parties involved (stakeholders). Evan and Freeman argue that corporate governance and social responsibility must be designed in such a way as to advance common interests, from internal stakeholders to external stakeholders, especially shareholders (Freeman et al., 2010). Companies are expected to meet expectations by providing comprehensive information about their activities and their impact on the social and environmental conditions of the community (Andrian & Kevin, 2021). By understanding stakeholder desires, managers can develop flexible business strategies. The strategy is not only able to fulfill all stakeholder interests but also achieve the company's ultimate goals. Information disclosure can communicate company activities and management perspectives on environmental issues and other companies. Companies that disclose carbon emissions will make it easier for stakeholders to make decisions about the state of the company's carbon emissions performance, pressure companies to reduce carbon emissions and contribute to public debate about climate change policies and regulations (Pratiwi, 2018). In this context, stakeholder theory is the foundation for a sustainable business strategy responsive to needs and expectations by building and maintaining a foundation of trust in the surrounding community for the company's sustainable future.
**Legitimacy Theory**

According to legitimacy theory, companies are obliged to establish social contracts with related parties, including the community and other stakeholders. Disclosure of non-financial information, such as Carbon Emission Disclosure (CED), is one of the mechanisms companies use to maintain and strengthen their legitimacy in the eyes of the public. By providing information on non-financial aspects, such as environmental impacts, companies seek to demonstrate conformity with social values and societal expectations. This action is considered a form of corporate social responsibility contributing to shared prosperity (Andrian & Kevin, 2021). Legitimacy theory briefly explains that companies will carry out environmental responsibility to gain legitimacy from society. Disclosures made on an ongoing basis that are consistent with social values in annual reports and sustainability reports can help increase the value or reputation of the company in the eyes of stakeholders and the public so that market responses can fluctuate.

**Investor Reaction**

This study derives the market index from the Indonesian Shari'ah Shares (ISSI) in the energy sector, a constituent of the List of Shari'ah Securities (DES). Bowman, in 1983, analyzed the behavior of security prices at a certain time in connection with an event or information announcement. Research in event studies focuses on the market response to an event that carries information. The market will show a reaction to events that carry important information. The event can be considered a surprise or something unexpected. The bigger the surprise, the more significant the reaction in the market (Bowman, 1983). Investor reaction shows investors' positive or negative response to the company, which is often reflected through changes in the company's stock price, affecting the company's stock return level (Daromes & Jao, 2020). The purpose of the market response is to test whether an announcement carries significant information, so it is expected that there will be price changes in related securities when the market receives the announcement (Talumewo, 2021). In the context of investment, Eko Cahyono states that return results from how much risk investors take in their investment activities (Cahyono, t.t.). Returns can be in the form of actual returns (Actual Return) or anticipated returns that have not yet occurred but are estimated to occur in the future (Expected Return) (Asyari & Hernawati, 2023). In the current study, the Cumulative Abnormal Return (CAR) proxy is used with a market model that uses the market model method in calculating the expected return with an estimation period of 60 days before the event period. The event period in this study counts five days before the event and five days after the event to get the Cumulative Abnormal return of each individual.

**Carbon Emission Disclosure (CED)**

Carbon emission is a compound released into the earth's atmosphere with carbon content, which comes from burning carbon compounds such as CO2 and other fuels. The release of carbon into the atmosphere causes the formation of greenhouse gas emissions, which will increase the temperature on Earth or cause global warming (Asyari & Hernawati, 2023). The issue of climate change has led to increased implementation of climate change mitigation policies at the national and international levels, along with the process of mandatory and low carbon emission product standards (Liu et al., 2023). As a result, companies, especially those engaged in carbon-intensive industries, especially the energy sector, face increasing pressure from society and pay more attention to issues related to their carbon emissions. Disclosure of carbon emissions is an important contribution of companies to environmental impacts, especially related to the issue of global warming. Usually, information on carbon emissions is conveyed through annual reports and sustainability reports (Pratama, 2021). In the current research, the disclosure of carbon emissions uses a disclosure index measurement developed by previous researchers, namely Choi et al. (2013), identified in the CDP (Choi et al., 2013). Based on these findings and previous research,
this study aims to test whether the disclosure of carbon emissions influences investor reactions. Therefore, the proposed hypothesis is as follows:
H1: Disclosure of carbon emissions influences investor reactions.

**Good Corporate Governance (GCG)**
Implementing effective corporate governance by applicable regulations can create a positive response from investors to the company's performance and increase the company's market value (Nuswandari, 2009). Research conducted by Cahyani in 2009 used the Corporate Governance Perception Index measurement, where each company voluntarily disclosed its GCG report to The Indonesian Institute of Corporate Governance (IICG), and the research was based on scores. In addition to the existence of references in achieving good corporate governance, including the Board of Directors and the independent Board of Commissioners, there is also a look at the aspect of the existence of an audit committee. The audit committee also aims to reduce conflicts and information gaps for shareholders (D. Pratiwi et al., 2020). Then research by He et al. (2021) in China found that there is an ongoing debate regarding women directors in corporate governance, which impacts the quality disclosure of carbon emissions. In addition, Fitroni & Feliana (2022) concluded that gender differences in the board of directors can affect the mindset and behavior in making decisions and solving problems in the company.
H2: Good Corporate Governance influences investor reaction

**Media Exposure**
Media exposure is more complicated than access because it involves not only whether a person is within the reach of certain mass media, but also whether a person is exposed to the messages conveyed (Asyari & Hernawati, 2023). Exposure is hearing, seeing, reading, or, more generally, experiencing a sense of interest in media messages. This statement confirms that media exposure is hearing, seeing, watching, and participating in blending with the media content delivered so that media exposure can be referred to as communication behavior. According to Aulia (2015), the media is a means of publication and socialization companies use to form trust in the community regarding company activities that impact and relate to the wider community. According to research conducted by Anggraeni & Budiasih (2016), media exposure has a very important role and is in line with legitimacy theory, where the public can easily access various information available to the company by uploading company activities, especially regarding the environment.
H3: Media Exposure influences investor reaction.

2. **Research Method**

This study uses quantitative methods with a causality approach and secondary data sources. The sampling selected in the study used the purposive sampling method, where purposive sampling is a sampling that limits the number of samples according to the criteria set by the researcher (Suharyadi, 2016). The sample in this study is energy sector companies listed on the Indonesian Sharia Stock Index (ISSI) for the 2021-2022 period with several criteria/characteristics, including the following:
Table 1. Research Sample

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sub-mining Energy Sector Companies in ISSI for the 2021-2022 period</td>
<td>36</td>
</tr>
<tr>
<td>2.</td>
<td>Sub-mining Energy Sector Companies in ISSI for the 2021-2022 period (not IDR currency)</td>
<td>(25)</td>
</tr>
<tr>
<td>3.</td>
<td>Sub-basic material Energy Sector Companies in ISSI for the period 2021-2022</td>
<td>40</td>
</tr>
<tr>
<td>4.</td>
<td>Sub-basic material Energy Sector Companies on ISSI for 2021-2022 period (not IDR currency)</td>
<td>(16)</td>
</tr>
</tbody>
</table>

Sample Quantity 35
Number of Observation Periods 2
Total Observation Data (35x2) 70

Investor Reaction

The dependent variable in this study is investor reaction proxied by Cumulative Abnormal Return (CAR) using the market model method (Asmaranti et al., 2018). The Cumulative Abnormal Return (CAR) proxy with a market model uses the market model method to calculate the expected return with an estimated period of 60 days before the event. The event period in this study counts five days before and after the event to get Cumulative Abnormal return (CAR) for each individual (Samsul, 2015). The following is the formulation to get CAR:

- **Abnormal Return**

  \[
  AR_{it} = R_{it} - E(R_{it})
  \]

  *Ket:*
  
  ARit: Abnormal return of stock I in period t  
  Rit: Stock return i in period t  
  E(Rit): Expected return of stock i in period t

- **Cumulative Abnormal Return (CAR)**

  \[
  CAR_{it} = \sum_{t=-n}^{t=n} AR_{it}
  \]

  *Ket:*
  
  CARit: Cumulative abnormal return for stock I in period t  
  ARit: Abnormal return of stock i in period t

Carbon Emission Disclosure (CED)

The independent variable in this study, which is proxied by the measurement of the variable, adheres to Choi et al. (2013) and Kelvin et al. (2019). The carbon disclosure checklist will give a score to each disclosure item with a dichotomous scale. The maximum score is 18, while the minimum score is 0. Each item is worth 1, so if the company fully discloses the item in its report, then the company's score is 18, then add up the scores of each company. Each disclosure item is given a score, then the total score is divided by the maximum score.

\[
CED = \frac{\text{Total item yang diungkapkan}}{18}
\]
Good Corporate governance
Research conducted by Ren He et al. in 2021 measures GCG using a diversity board with a dummy method: if there is a female director, it is rated one. If not, it is rated zero. (He et al., 2021). In addition, in research (Hamdani & Hatane, 2017) and (Fitroni & Feliana, 2022) Measure GCG through the diversity board by matching the presence of female directors with the number of directors on the board. Therefore, the next measurement of the independent variable in good corporate governance is calculated according to the number of female directors.

Media Exposure
Information relating to the disclosure of social, environmental, and other non-financial responsibilities can be communicated through the company's annual report. Measurement of the Media Exposure variable is proxied using a dummy variable often called a nominal scale. The nominal scale is only given to objects with the meaning of labeling and does not increase any value (Suharyadi & S.K, 2016a).

Hypothesis Testing Technique
The data review in this study is carried out through stages that include panel data estimation models, panel data regression models, and significance tests. Regression analysis in this research is carried out to determine the effect of Emission Carbon Disclosure, Good Corporate Governance, and Media Exposure variables on Investor Reaction. In this study, data processing uses panel data because the research data consists of 35 companies over two years. In processing, this study uses the Eviews application program in the data analysis technique. Eviews (econometric views) is a Windows-based computer application program often used for statistical analysis and time series econometrics (Kusumaningtyas et al., 2022)

3. Results and Discussions

Descriptive Statistics
These results show that the total research data is 70 energy sector companies listed on the ISSI in 2021-2022. Investor reaction or CAR has a minimum level of -0.334924 with a maximum level of 0.385904. The average of 70 samples is -0.00392 with a standard deviation of 0.128560. CED has a minimum level of 0.111111 with a maximum level of 0.944444. The average of 70 samples is 0.555556 with a standard deviation of 0.203131. GCG has a minimum level of 0.00000 with a maximum level of 3.000000. The average of 70 samples is 0.609375, with a standard deviation of 0.789156. ME has a minimum level of 1.00000 with a maximum level of 2.000000. The average of 70 samples is 1.000000 with a standard deviation of 0.502787. Investor reaction is measured by return as a price change using abnormal return. Analyzing abnormal returns can be done by looking at pattern movements. If investors anticipate company information, there will be two investor responses, positive and negative. That is, a positive response by investors is expected to provide a positive return (+). Conversely, negative company information will not cause a return or abnormal return from the company for investors or a negative (-) return. Meanwhile, if investors do not anticipate the published information, the CAR or abnormal return will be zero (0). (Asyari & Hernawati, 2023).

In this study, out of 70 samples, 32 or as many as 46% indicated negative CAR (-). This indicates that the shrinkage of the abnormal return continues until the day of the announcement or disclosure of information. And this information disclosure is considered a signal source of information by investors. Investors anticipate that information disclosure indicates the company's poor prospects. Conversely, 38 samples, or 54% in this study, indicated a positive CAR (+), indicating an increase in abnormal return up to the day of disclosure of company information, which was responded to positively by investors. Therefore, in this study, samples with positive
investor reactions are more dominant than negative investor reactions, which indicates that investors see good prospects for the company.

**Table 2. Descriptive Statistics**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investor Reaction</td>
<td>70</td>
<td>-0.33492</td>
<td>0.385904</td>
<td>-0.00392</td>
<td>0.128560</td>
</tr>
<tr>
<td>CED</td>
<td>70</td>
<td>0.111111</td>
<td>0.944444</td>
<td>0.555556</td>
<td>0.203131</td>
</tr>
<tr>
<td>GCG</td>
<td>70</td>
<td>0.000000</td>
<td>3.000000</td>
<td>0.000000</td>
<td>0.770711</td>
</tr>
<tr>
<td>ME</td>
<td>70</td>
<td>1.000000</td>
<td>2.000000</td>
<td>1.000.000</td>
<td>0.502787</td>
</tr>
</tbody>
</table>

Source: Eviews 12

**Hypothesis Testing**

The Adjusted R-squared value is 0.122134 or 12.2%. The coefficient of determination shows that the independent variables of CED, GCG, and ME can explain the CAR variable by 12.2%. In comparison, the remaining 87.8% is explained by other variables not included in this research model.

**Table 3. Determination Coefficient Test Results**

<table>
<thead>
<tr>
<th>Dependent Variable: CAR</th>
<th>Adjusted R-squared</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.122134</td>
</tr>
</tbody>
</table>

Source: Eviews 12

The calculated F value is 4.199909, the F-table is 2.527907, and the sig value is 0.008819 <0.05, then Ha is accepted, which means that the variables ECD, GCG, and ME together affect CAR.

**Table 4. F Test Results**

<table>
<thead>
<tr>
<th>Dependent Variable: CAR</th>
<th>F-Statistic</th>
<th>Prob (F statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.199909</td>
<td>0.008819</td>
</tr>
</tbody>
</table>

Source: Eviews 12

**Table 5. T-test results**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Prob</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.017550</td>
<td>0.7423</td>
<td></td>
</tr>
<tr>
<td>CED</td>
<td>0.067157</td>
<td>0.4013</td>
<td>H1 Rejected</td>
</tr>
<tr>
<td>GCG</td>
<td>0.059214</td>
<td>0.0045</td>
<td>H2 Accepted</td>
</tr>
<tr>
<td>ME</td>
<td>-0.063466</td>
<td>0.0469</td>
<td>H3 Accepted</td>
</tr>
</tbody>
</table>

Source: Eviews 12
Effect of Carbon Emission Disclosure on Investor Reaction

Increased awareness of climate change and sustainability has prompted companies to pay more attention to their environmental impacts. Carbon emission disclosure has become important to corporate social responsibility (CSR) and corporate financial reporting (Asyari & Hernawati, 2023). Based on the temporary conjecture or hypothesis presented, the Disclosure of carbon emissions (ECD) can significantly affect Investor Reaction, which is the abnormal return accumulated according to certain proxies. So, this hypothesis refers to the legitimacy theory put forward by Dowling (Dowling & Pfeffer, 1975).

The results of this study are in line with research conducted by Asyari & Hernawati (2023) The results showed that the disclosure of carbon emissions hurt investors due to the low perception of most investors of the disclosure of carbon emissions. In research conducted by Asmaranti et al. (2018) explained that the disclosure of carbon emissions by companies in Indonesia is still low, so it contradicts the research conducted by Han & Lu (2023) The disclosure of relatively low carbon emissions will produce a fairly high return due to investors' high level of awareness. Therefore, the desire for more information disclosure, such as carbon emission disclosure from companies, is not aligned with investors' perspective. So, it needs to be followed up to socialize with the public and investors how the company exposes its environmentally oriented responsibilities.

The Effect of Good Corporate Governance on Investor Reaction

In this context, companies use annual reports to report and disclose their environmental and corporate governance responsibilities, hoping to gain society's acceptance. This acceptance is expected to add value to the company and improve its image, not just limited to achieving profits (Hamdani & Hatane, 2017) Also revealed that the presence of women in the composition of directors can improve company performance due to the level of attendance at meetings so that the board of commissioners can obtain accurate company information. Based on the temporary conjecture or hypothesis presented, Good Corporate Governance (GCG) has a significant effect on Investor Reaction (CAR). After testing, it turns out that the hypothesis has been accepted, which means that the GCG variable affects CAR. It can be concluded that Corporate Governance, which has gender diversity on the board of directors, can pave the way for the company to advance and increase the company's value so that it can attract or retain investors because the foundation the company has is strong. The expression described by He et al. (2021) Women's characteristics have an impact that helps the company because most investors have more confidence in the integrity of female directors. In addition, gender diversity can expand innovation and vary when interacting with investors because women tend to share patience, so this will help women develop their ability to respond to relationships and situations (Fitroni & Feliana, 2022).

The Effect of Good Corporate Governance on Investor Reaction

In legitimacy theory, if a company does not operate according to values and norms, society may not accept the company legitimately. Through the company's media exposure, the public can easily assess the extent to which the company discloses its responsibilities. Therefore, the public can easily find bad information about the company, which can harm the company's image in the eyes of investors and the public. Based on the temporary conjecture or hypothesis presented, Media exposure significantly affects Investor Reaction (CAR). Based on the test results presented, it can be seen that the Media Exposure variable has a direct effect on investor reactions. This can be interpreted as investors directly trusting the company to make media exposure a reference material in decision-making in general.
4. Conclusions

The results of this study indicate that the disclosure of carbon emissions does not have a significant effect on investor reactions, which can be said that there is still very little socialization from the company regarding operational activities in the environment to the community as shareholders, or it is possible that shareholders or investors do not have a sense of concern for the environment. Meanwhile, corporate governance characterized by gender diversity and media exposure can significantly influence investor reactions.

References


