

# Does Readability Annual Report, External Pressure, and Social Responsibility Disclosure Affect Carbon Emission Disclosure?

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**Abstract.** This study examines the effect of annual report readability, external pressure, and social responsibility disclosure on carbon emission disclosure. It uses control firm size, return on assets, debt to equity ratio, and media exposure variables. The study uses a quantitative approach and panel data using 174 firm-year observations of energy sector companies listed on the Indonesia Stock Exchange for the 2015-2020 period. The data analysis technique used is multiple linear regression using SPSS 28 as a test tool. This study uses proxy measurement for social responsibility disclosure using the ISO 26000 index to give a new perspective on the company's commitment to carrying out its social responsibility disclosure. The result of this study's external pressure proxied by the proportion of tradable shares and financing debt ratio and annual report readability do not affect carbon emission disclosure. In contrast, social responsibility disclosure positively affects carbon emission disclosure. This study implies that companies should improve and pay more attention to the disclosure of social responsibility in aspects of sustainable resource use and climate change mitigation and adaptation to support the achievement of net-zero emissions and support sustainable development goals.

## 1 Introduction

Extreme weather changes have occurred globally and have become a significant problem in recent years. According to Our World in Data by Oxford, in 2020 level of carbon emissions per capita resulting from burning fossil fuels for energy and cement production in several countries, among others, Australia (15.37 t), the United States (14.24 t), China (7.41 t), United Kingdom (4.85 t) and Indonesia (2.16 t). Global warming is the main problem of climate change caused by human activities such as burning fossil fuels and oil, which causes carbon dioxide in the atmosphere [1]. Therefore, global warming has become an increasing political and trade issue vital for most countries [2, 3].

According to the Intergovernmental Panel on Climate Change, Human actions have caused climate change and caused more extreme events; if global warming reaches 1.5°C shortly, it will have a more severe impact on the climate and human ecosystems. Of course, this is in line with the Paris Agreement, an international agreement made by the United Nations Framework Convention on Climate Change (UNFCCC) on the law of change that aims to limit global warming to well below 2°C [4]. In addition, Indonesia is the third country with the largest rainforest but has allowed it to join the ranks of the largest greenhouse gas emitters in the world; this is partly due to a warming climate and deforestation [5]. Indonesia targets reducing greenhouse

gas emissions by 29% with its capabilities and 41% with international assistance for 2030 [6].

On the other hand, countries have made many efforts to reduce carbon emissions. However, several efforts have been made both globally and nationally. Steps were produced globally; namely, the Kyoto Protocol held in Japan and planned to reduce greenhouse gas emissions. Then, there was the Paris Agreement, which was made to hold back the increase in the earth's temperature. Furthermore, there was the 26th Conference of the Parties (COP26) held in Glasgow, which discussed the deadline for countries to submit new Nationally Determined Contributions (NDCs) contributions for 2030 to stabilize greenhouse gas concentrations in the atmosphere. Not only that, recently, the G20 was held in Bali in 2022 to secure the future growth and prosperity of the global economy. Of course, the handling of climate change must be placed in line with the broad framework of sustainable development.

Indonesia has ratified several international agreements into Presidential Regulation No. 98 of 2021. Thus, this indicates that it is crucial to carry out mitigation related to carbon emissions to achieve net zero emissions. This can support the achievement of sustainable development goals. In article 4, government regulations No. 61 of 2011, it is stated that business actors also take part in efforts to reduce greenhouse gas emissions through Carbon Emission Disclosure. Therefore, companies can make decisions about their

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concern for the climate by disclosing carbon emissions in their annual reports. Carbon Emissions Disclosure (CED) is carried out as an accounting treatment to inform issues related to global interests related to the environment [7].

Not only that, there is a provision from The Financial Services Authority issued POJK Number 51 of 2017 article 10, which contains since 2021, that all Financial Services Institutions, Issuers, and public companies are required to compile and disclose reports stating that Disclosure of Carbon Emissions in Indonesia is Mandatory Disclosure and is no longer voluntary Disclosure. In addition, the Sustainability Accounting Standards Board (SASB) has created disclosure of metrics and targets that can be used to assess and manage relevant climate-related risks and opportunities in which the information is material to make it easier for investors to evaluate the company [8]. The basis of this understanding is that more prominent attention to the scope of the problem is likely to lead to more environmentally responsible decision-making [2].

Given these phenomena and provisions, many studies have been conducted to find factors that influence the disclosure of carbon emissions; Several studies have examined carbon emissions disclosures with different variables, samples, and results. Based on research conducted by [7] researching variables green strategy, corporate social responsibility disclosure, and good corporate governance with a research sample of consumer goods companies in Indonesia positively influences CED. In [9] research that examines the pressure of stakeholders, regulators, media, and creditors with the research sample, the highest carbon-producing company in Australia affects carbon management strategies. Based on [10] research with a sample of top 100 public-listed companies in Malaysia with leverage that has negative related and growth, CEO duality, and the presence of independent directors not related to carbon disclosure. Thus, research on carbon emissions still needs to be carried out and motivated to research by looking for factors that can affect carbon emissions disclosures, namely the readability of annual reports, external pressure, and social responsibility disclosures.

Based on the results of research conducted by [11-13], show that the readability of the annual report has a positive effect on CED. This indicates that high-quality reporting in the form of transparency and good readability will indicate high management and disclosure of carbon emissions because it reflects socially responsible behavior and reduces environmental risks. The disclosure report will be more difficult to read by stakeholders if the disclosure and carbon producers are low, and vice versa. However, research conducted by [14] found that the readability of the annual report has a negative impact on carbon emission disclosures; this is because the more disclosure of sustainability information, the longer the content of the report, which makes reporting challenging to read and may be carried out to cover negative sustainability performance.

Based on the results of research conducted by [15-17], External Pressure has a positive effect on Carbon

Emission Disclosure. There is external pressure from several parties, namely the government, government regulations, and shareholders. The government and its rules encourage companies to conduct activities and disclose carbon emission reductions. Other external pressures also support the act of disclosing carbon emissions. On the other side, external pressure negatively impacts CED. There is a negative impact because creditors have concerns about the decline in market share caused by the allocation of environmental costs charged to consumers. Then there is the company's geographical location factor which is not significant to disclosing environmental information.

Based on the results of research conducted by [18, 19], Social Responsibility Disclosure (SRD) has a positive effect on CED. Disclosure of Corporate Social Responsibility (CSR) by the company has social benefits, where pollution is one of the goals. The sustainability strategy is one form for companies to show their involvement in sustainability, and one of them is the disclosure of carbon emissions. So that it can be interpreted that with increasing disclosure and social responsibility strategies, the CED will also be higher. Meanwhile, based on the research of [20] stated that CSR is a social business responsibility in which the results of fulfilling economic, legal, and ethical expectations of the organization at a specific time, so it can be interpreted as that SRD will not have an impact on increasing CED.

In this study, we use the control variable because if the variables outside the dependent and independent variables that we examine are not controlled properly, it will affect the results of this study, so we use the control variables, namely company size, return on assets, debt to equity ratio, and media exposure. Firm size means a giant company, measured using total assets [21]. Based on [22-25], firm size has a significant positive effect on carbon emission disclosures. This is in line with the thoughts of the researchers, where the company size has a positive impact on carbon emission disclosures due to the larger the size of the company, the more pressure from external parties to carry out environmental management activities.

Profitability is a ratio to measure the company's ability to generate profits [26]. Return on assets has a significant positive effect on carbon emission disclosures, according to several researchers [25, 27, 28, 22]. In line with this research, the better the company's financial condition, the better the decision-making and environmental management. Leverage is a ratio used to measure the level of debt owed by the company [29]. According to research by [30-32], debt to equity has a significant negative effect on carbon emission disclosures. This is in line with these studies, which state that the higher the leverage, the fewer funds for environmental activities.

Media exposure is a form of information exposure through the media to the audience [33]. Finally, based on several studies, including [34-36], media exposure has a significant positive effect on carbon emission disclosure. This is in line with the research results where the role of the media encourages companies to publish their activities and disclose carbon emissions. This study

used energy sector companies for the 2015-2020 period. Based on The Nationally Determined Contribution (NDC), the energy sector is one of the priority sectors for achieving net-zero emissions [37].

Several factors have been identified; however, there are still differences, and as a result, there are still gaps that affect both positively and negatively. Based on the research of [9, 38, 39, 12, 13] has a positive effect, while research by [14, 32, 20] has a negative impact. Some of these studies examine different countries, research samples, and cultures. This difference is the basis of motivation for researchers to conduct research again with the country and use the research context in Indonesia, which is culturally and characteristically different from other countries that previous researchers sampled.

### 1.1 Objectives

Given that findings from prior studies remain inconclusive, further research is needed to understand the influence readability of annual reports, external pressure, and social responsibility disclosures. Therefore, this paper aims to fill this gap and contribute to the study relating to readability of annual reports, external pressure, and social responsibility disclosures.

## 2 Literature Review

Readability is used to measure clarity and estimate how easily a text can be understood [40, 41]. The theoretical framework for the readability of the annual report is based on stakeholder theory. The stakeholder theory also explains a relationship between stakeholders and all the information they receive [42]. Research [43] explains that easy-to-read disclosures increase the confidence of stakeholders (investors) in relying on this information. Aligned with an explanation of easier-to-read reports, it can help market participants make decisions and increase the relevance of the value of information [44]. In this case, the readability of carbon emission disclosures is critical to make it easier for investors to assess the company. An easy-to-read text is a text in which the reader can understand the information provided [45]. Therefore, with the delivery of data from the company to its stakeholders, the company also needs to pay attention to the readability of the annual report and sustainability report so that its users can easily understand it.

Thus, several studies support the idea that the readability of annual reports on carbon emissions, including research from [13] there is a significant positive relationship between CSR performance and the readability of the annual report said that there is good readability of annual reports using simple language and has a positive impact on carbon emissions. Based on [46], CSR performance and the readability of CSR reports have a significant positive relationship. The stronger the company's CSR performance, the higher the report's readability. Another research conducted by [12] stated that high-quality and easy-to-read reporting is in line with managing and reporting carbon emissions to

reduce environmental risks. Based on this, the hypotheses built are:

**H<sub>1</sub>:** Readability annual report has a positive impact on carbon emission disclosure

External pressures that support sustainability are pressures that come from regulation, competition, society, and customers [47]. The external pressure theoretical framework is based on institutional theory and stakeholder theory. The pillars of the institutional theory are normative, regulatory, and cognitive culture [48]. It thus creates where the organization must operate because institutional pressures from these pillars affect individual organizations and populations [49]. Based on institutional theory, companies need to develop their structure and operational activities in line with the conditions of their external environment. It is also supported by stakeholder theory, where [50] stated that the stronger the stakeholder, the more adaptable the company must be. From this perspective, it can be interpreted that there are various pressures from stakeholders (creditors, government, community, shareholders, and other parties) who care about the environment and climate change to the disclosure of carbon emissions on the company [51]. So, at this time, the company carries out all activities due to external pressure from stakeholders, including regulators, the community, and other parties, to disclose carbon emissions.

That way, pressure from stakeholders (shareholders, community, creditors, and government) positively impacts the disclosure of carbon emissions. According to studies [38], there is a significant relationship between external pressures and environmental outcomes. The adoption of CMS is significantly related to the perceived pressure from regulators, media, and creditors. By influencing CED, the government is more effective in encouraging companies to take action on climate change [9]. Based on [16], External pressure is positive and significant; the greater the external pressure, the higher the level of carbon information disclosure. According to research [52], Organized stakeholders at the corporate level influence the company's carbon disclosure strategy. Also, [53] external pressures affect companies to adopt most carbon management practices. The research above states that pressure from external pressure, especially environmental pressure, forces companies to be more concerned about the disclosure of environmental information. Based on this, the hypotheses built are:

**H<sub>2</sub>:** External pressure has a positive impact on carbon emission disclosure

Social responsibility disclosure is a strategy in the form of social activities companies use to demonstrate their compliance with stakeholders, and so that company activities can be accepted by the community [54]. The theoretical framework for social responsibility disclosure is based on stakeholder theory and institutional theory. Stakeholder theory explains that companies need to have benefits for stakeholders besides the entity operating for its interests [3, 55]. Thus, the company certainly needs to carry out social activities and provide this information to its stakeholders as a form of corporate responsibility. This is an example where the

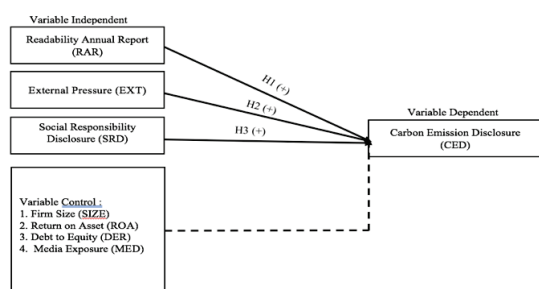
company informs the activities or efforts of reducing carbon emissions and the company's social responsibility activities in the annual report and sustainability report.

According to several studies analyzing the effect of social responsibility disclosure on carbon emission disclosures [19] stated that CSR initiatives, consumer proximity, and environmentally sensitive sectors positively affect climate change disclosure. The company's environmental performance is based on government ownership and verification of environmental initiatives and control variables related positively to climate change disclosure [39]. The CSR-oriented director's strategy and the board's CSR strategy have a significant positive impact on CED [56]. Stated that social responsibility disclosure has a significant positive effect on carbon emission disclosures because stakeholders can see the relationship between increased corporate social disclosure and climate change transparency. Based on this, the hypotheses built are:

**H3:** Social responsibility disclosure has a positive impact on carbon emission disclosure

### 3 Methods

The object of this research is the energy sector companies listed on the Indonesia Stock Exchange (IDX) for the 2015-2020 period. The data processing technique in this research is balanced panel data. It uses panel data because it combines time series and cross-section data. We use the time-series data for the 2015-2020 period and a cross-section that uses data from companies in the energy sector. This study uses quantitative research. We use secondary data from the annual report of the Indonesia stock exchange, company website, sustainability report, and ESGI data bank. The dependent variable is carbon emission disclosure; the independent variable is the readability annual report, external pressure, and social responsibility disclosure, and the control variables in this study are firm size, return on assets, debt to equity ratio, and media exposure, so the study framework can be seen in figure 1. We use the dependent and independent variables to emphasize the disclosure process in voluntary activities. While reporting tends to refer to "reports," which are used to "disclose" specific topics, such as sustainability and environmental reports, while "disclosure" is to provide information to readers through reports [57].



**Fig. 1.** Study Framework

Carbon emission disclosure is measured based on the carbon disclosure project (CDP), which refers to the practice of disclosing environmental changes, energy consumption, costs, and accountability for carbon emissions [33]. Readability is a measure of textual complexity, the meaning that the more complex the text, the more difficult the information will be to understand [44]. External pressure arises from various parties, including shareholders, public policy, and regulators [58]. Social responsibility is measured using ISO26000, which regulates corporate governance, human rights, and labor relations and responds to consumer problems [59].

**Table 1.** Variable and Measurement

Variable	Sub Variable	Measurement and indicator
Carbon Emission Disclosure Source: [2, 3]	1. Aspect Disclosure Climate Change: Risks and Opportunities 2. Aspect Disclose GHG Emission 3. Aspect Disclose Energy Consumption 4. Aspect Disclose GHG Reduction and Cost 5. Aspect Disclose Carbon Emission Accountability	CED: V/M Description: V: Total item disclosed M: Total expected item  Indicators: CED1: 2 items CED2: 11 items CED3: 4 items CED4: 4 items CED5: 2 items
Readability Annual Report Source: [60, 61]	Gunning Fog Index	Gunning Fog Index = (word per sentence + percent of complex words) x 0.4
External Pressure Source: [16]	The proportion of Tradable Shares	BLOG: Proportion of Tradable Shares: Stocked floated/total equity
	Financing Debt Ratio	CRED: Financing Debt Ratio: (short-term borrowing + long-term loan)/total Asset
Social Responsibility Disclosure Source: ISO 26000	1. Aspect Disclose Organizational governance 2. Aspect Disclose Human Rights 3. Aspect Disclose Labour Practices 4. Aspect Disclose The environment	SRD: V/M Description: SRD: Social Responsibility Disclosure V: Total item disclosed M: Total expected item  Indicators: Core subject 1: 1 item

	5. Aspect Disclose Fair Operating Practices 6. Aspect Disclose Consumer Issues 7. Aspect Disclose Community Involvement and Development	Core subject 2: 8 items Core subject 3: 5 items Core subject 4: 4 items Core subject 5: 5 items Core subject 6: 7 items Core subject 7: 7 items
Firm Size Source: [62]	Firm size proxy by total asset	$Size = \sum Ln$ Total Asset Description: Ln = Natural logarithm
Profitability Ratio Source: [63]	Return on Asset	$ROA = \frac{Net\ Income}{Total\ Asset}$ Description: Net income: net income after tax Total asset: total assets of the company in a period
Leverage Ratio Source: [64]	Debt to Equity Ratio	$DER = \frac{Total\ Debt}{Total\ Equity}$ Description: Total Debt: the total debt in the company in a period Total Equity: the total equity of the company in a period
Media Exposure Source: [30]	Media Exposure is seen by companies that share more information concerning carbon emissions through the company website, as well as various media disclosures such as annual reports, sustainability reports, newspapers, and other media	Media exposure measured used dummy variables where a value of 1 for companies that share more information concerning carbon emissions through the company website and various media disclosures such as annual reports, sustainability reports, newspapers, and other media, while

		the value was 0 otherwise.
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## 4 Data Collection

We use the content analysis technique for the variables of carbon emission disclosure, readability annual report, and social responsibility disclosure. Carbon Emission Disclosure (CED) and Social Responsibility Disclosure (SRD) are measured using a dummy variable, 1 for companies that report in the Annual Report and/or Sustainability Report, and 0 for non-companies that provide information in the Annual Report and/or Sustainability Report. Each item in the company's report is given a value of 1; the total company disclosure items are 37 (SRD) and 23 (CED). After that, the disclosure value of each company is divided by the total. Readability Annual Report is measured using the Fog Index, a measurement of the computational linguistics literature developed by Robert Gunning [65]. The Gunning Fog Index is used to test the readability of material intended for readers and the preparation of company reports [44]. We use Proportion of Tradable Shares (BLOG) and Financing Debt Ratio (CRED) for external pressure factors. BLOG is the proportion of shares traded, so it can be interpreted that public shareholders can create pressure on the company. CRED is a financing ratio that reflects the pressure from creditors [16]. An explanation of the measurement of each variable can be seen in table 1.

## 5 Results and Discussion

### 5.1 Numerical Results

Table 2 will explain the results of descriptive statistics in this study:

**Table 2.** Descriptive Statistics

Variable	Min	Max	Mean	Std Deviation
CED	0.0000	0.7391	0.1664	0.1920
RAR	12.8547	29.2000	18.7363	1.9136
EXT*	-0.0799	0.1363	0.0028	0.0138
EXT**	0.0880	2.0358	0.5354	0.2640
SRD	0.1622	0.8378	0.5506	0.1716
SIZE	20.0271	25.4861	22.6689	1.3599
ROA	-1.1222	0.4556	0.0116	0.1511
DER	-10.1882	162.1920	2.0727	12.4171
MED	0.0000	1.0000	0.6900	0.4640
note * external pressure proxy by BLOG ** external pressure proxy by CRED				

When monitoring sector energy in 2015-2020, table 2 shows that the lowest minimum value was determined by debt to equity ratio (DER) -10,1882. This is because the company recorded continuous losses, which has a

negative equity value. The debt owns the maximum value to equity ratio (DER) 162,1920. This indicates the higher the level of debt indicates, the company's interest expense will be greater and reduce profits. The mean value of the CED variable is 0.1664, RAR is 18.7363, EXT (BLOG) is 0.0028, EXT (CRED) is 0.5354, SRD is 0.5506, SIZE is 22.6689, ROA is 0.0116, DER is 2.0727, and MED is 0.6900. Standard deviation value id owned by external pressure proxy by BLOG 0.0138. When comparing the mean and standard deviation in this study, all the variances used have a mean value greater than the standard deviation value. This indicates that the distribution of data used in this study is homogeneous.

After doing some regression analysis using several models, the best model for this research is using SPSS 28. Based on the classical assumption test, the normality test uses the Kolmogorov Smirnov test, and the result showed an asymp. Sig. The value of 0,010 in model 1 (external pressure proxy by BLOG) and 0,032 in model 2 (external pressure proxy by CRED) is smaller than the P-value of 0,05. It can be concluded that the data are not normally distributed. However, according to the central limit theory, which explains that research with more than 100 observations, the assumption of normality can be ignored [66]. The heteroscedasticity test uses Spearman's Rho test, and the result shows that all variables have a significant value greater than 0,05. Thus, it can be concluded that there is no heteroscedasticity. The autocorrelation test was conducted using the Cochran-Orcutt, and the result shows a value of 1,939 on model 1 and 1,909 on model 2. This value is in the range of du (1,8362) and 4-du (2,1638); therefore, there is no autocorrelation. The multicollinearity test aims to see the correlation between the independent variables. Each shows a tolerance value greater than 0,100 and a VIF value less than 10 in model 1 and model 2. Therefore, it can be concluded that there is no multicollinearity in this study [67].

Based on Table 3 and Table 4, the probability statistics of the F value is 0,001 in model 1 and model 2, which is under the significance value of 0,05. Thus, it can be concluded that RAR, EXT\*, EXT\*\*, and SRD simultaneously affect CED. The coefficient determination value is 0,5300 in model 1 and 0,5330 in model 2. RAR, EXT\*, and SRD can explain the CED of 53% in model 1, and RAR, EXT\*\*, and SRD can explain the CED of 53,3% in model 2 while remaining 47% in model 1 and 46,7% in model 2 is explained by other variables not included in this study. The Standard Error Of Estimation is 1,3160 in model 1 and 0,1312 in model 2. This means that the smaller the SEE value, the more precise the regression model in this study predicts the dependent variable carbon emission disclosure. A t-test was conducted to see the partial influence of each independent variable on the dependent variable. From the result, RAR, EXT\*, and EXT\*\* show a probability value less than the significance value of 0,05, and SRD shows a probability greater than 0,05. Therefore, it can be concluded that RAR, EXT\*, and EXT\*\* do not affect CED, while SRD affects CED.

**Table 3.** Regression Result Model 1

Variable	Pred. sign	Coeff	t-stat	Significance	Result
Constant		0,2000	-7,3740	0,0005	
RAR	+	0,0060	1,3770	0,0850	Rejected
EXT*	+	1,2130	0,3540	0,3620	Rejected
SRD	+	0,0970	5,011***	0,0005**	Accepted
SIZE		0,0090	5,9840	0,0005	
ROA		0,0750	-2,0730	0,0200	
DER		0,0010	-0,1140	0,4545	
MED		0,0330	-0,7750	0,2195	
F-statistic	0,001				
Adj. R Square	0,5300				
Std. Error	1,3160				
N	174				
note:					
*EXT variable external pressure proxy by BLOG *** p<0,05					

**Table 4.** Regression Result Model 2

Variable	Pred. sign	Coeff	t-stat	Significance	Result
Constant		0,1960	-7,4290	0,0005	
RAR	+	0,0060	1,5110	0,0665	Rejected
EXT**	+	0,4400	-1,0320	0,1520	Rejected
SRD	+	0,9700	5,0660	0,0005**	Accepted
SIZE		0,0090	6,0460	0,0005	
ROA		0,0800	-2,2950	0,0115	
DER		0,0010	0,4180	0,3380	
MED		0,0330	0,5180	0,2810	
F-statistic	0,001				
Adj. R Square	0,5330				
Std. Error	0,1312				
N	174				

note:					
** variable external pressure proxy by CRED					
*** p<0,05					

## 5.2 Discussion

Based on the significance level, it can be concluded that RAR does not affect CED. This implies that the findings are consistent with previous studies [14], the readability of the annual report has no influence on carbon emission disclosures; this is because the more disclosure of sustainability information, the longer the content of the report, which makes reporting challenging to read and may be carried out to cover negative sustainability performance. An insignificant result of RAR on CED because the readability of the annual report is only a measurement to see the quality of the report writing for its users. It does not affect the company's level of disclosure of carbon emissions.

Based on the significance level, it can be concluded that EXT does not affect CED. The finding is in line with previous research conducted by [68], explaining that shareholders and creditors do not influence carbon disclosure decisions. An insignificant result of EXT on CED is because most of the company's pressure from various parties such as creditors and investors are more inclined to pay attention to the level of profits generated by the company compared to the level of social activities carried out by the company.

Based on the significance level, it can be concluded that SRD affects CED. This implies that the findings are consistent with previous research conducted by [18] and [19]. Disclosure of Corporate Social Responsibility (CSR) by the company has social benefits, where pollution is one of the goals. The sustainability strategy is one form for companies to show their involvement in sustainability, and one of them is the disclosure of carbon emissions. So that it can be interpreted that with increasing disclosure and social responsibility strategies, the CED will also be higher.

## 6 Conclusion

Using a quantitative approach with a content analysis method, this study examines the effect of annual report readability, external pressure, and social responsibility disclosure on carbon emission disclosures. This analysis result shows that SRD has a positive impact on CED because the higher the disclosure of social activities, which are activities to reduce carbon emissions, thus increasing the disclosure of carbon emissions. RAR, in contrast, does not affect CED because readability is a measurement of the readability of a report, so it does not affect the disclosure of carbon emissions. EXT does not affect CED because external pressure focuses on corporate profits than corporate social activities.

In terms of practical implications, the results of this study show that companies should improve and pay more attention to the disclosure of social responsibility in aspects of sustainable resource use and climate change mitigation and adaptation to support the

achievement of net-zero emissions and support sustainable development goals. Companies are expected to improve high-quality reporting in the form of transparency. Good readability will indicate high management and disclosure of carbon emissions because it reflects socially responsible behavior and reduces environmental risks. The limitation of this study is the subjectivity in the assessment phase of the content analysis to determine the level of SRD and CED. The classic assumption test problem shows that data distribution is not normally distributed due to extreme scores, and the amount of information is also a limitation in this study. Future research in this field can use different sectors included as priority sectors to reduce GHG emissions, namely forestry and agriculture. A more extended research period can also be done to make the research more comprehensive and generalized. Further research is also expected to use other control variables such as environmental performance, type of industry, and company growth.

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