

Literature Review on The Effect of Firm Size on Carbon Emission Disclosure (CED)

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ABSTRACT

Carbon Emission Disclosure (CED) is a transparent disclosure related to environmental activities for the sake of reputation and business continuity is closely related to Stakeholder Theory that companies must also pay attention to stakeholders. This research aims to conduct a comprehensive literature study on the effect of firm size on Carbon Emission Disclosure (CED). This research is a qualitative study using the literature review method. The literature reviewed includes articles from international and national journals with a total of 18 articles from 2018-2024, which provide a comprehensive and up-to-date view on firm size and CED. The results of the literature review highlighted that firm size affects CED reporting. Larger companies tend to have better resources, such as access to advanced technology and expertise, which enables more transparent and detailed reporting of carbon emissions. This helps companies fulfil stakeholder demands for environmental reporting and enhances their credibility and reputation with the public and investors. Thus, paying attention to firm size is crucial in understanding the dynamics of carbon emissions disclosure and corporate sustainability strategies across industries.

Keyword: Firm Size, Carbon Emission Disclosure, Stakeholder Theory.

INTRODUCTION

In recent years, global warming has been a major issue faced by countries around the world. Based on data from the World Meteorological Organization (WMO), global warming has approached the limits set in the 2015 Paris Agreement, which targets a maximum temperature increase of 1.5°C above pre-industrial levels (Climate4life, 2023). The Paris Agreement is an international agreement that aims to hold the global average temperature rise to well below 2°C above pre-industrial temperatures and seeks to limit the temperature rise to 1.5°C above pre-industrial temperatures (Nurngaini, 2024).

On 23 April 2016, Minister of Environment and Forestry Dr. Siti Nurbaya signed the Paris Agreement on Climate Change at the High Level Ceremony for the Signing of the Paris Agreement, which means that Indonesia must play an active role in realising the goals of the agreement (Bryan Hulu et al., 2024). However, Traction Energy Asia Executive Director Tommy Pratama stated that Indonesia annually contributes 1.3 Gigatonnes of CO₂e to greenhouse gases. Indonesia ranks eighth in the world in greenhouse gas emissions and first in Southeast Asia, especially carbon dioxide (CO₂). From the Ministry of PPN's study in 2022, the largest contributor to emissions in Indonesia is caused by energy sector companies which contribute around 50.6% or 1 Gigaton CO₂e of total emissions in 2022 (Jikalahari, 2024).

In reducing carbon dioxide (CO₂) emissions, the role of companies in Indonesia is needed to be more aware of Carbon Emission Disclosure (CED). Disclosure and reporting of

corporate carbon emissions began to develop in Indonesia due to demands from stakeholders and regulations issued by the government, including Presidential Decree No. 61 of 2011 concerning the National Action Plan for Reducing Greenhouse Gas Emissions, Presidential Decree No. 71 of 2011 concerning the Implementation of the National Greenhouse Gas Inventory, Law No. 16 of 2016 concerning Ratification of the Paris Agreement and Presidential Decree No. 98 of 2021 concerning the Implementation of Carbon Economic Value (Widiawati & Hidayati, 2024).

Carbon Emission Disclosure is the disclosure provided by the company in calculating CO₂ to minimise carbon consumption (Cahya, 2016). Therefore, companies need to make transparent disclosures related to environmental activities for the sake of reputation and business continuity. The above phenomenon is closely related to Stakeholder Theory that companies are not only oriented towards their company's profits, but also must pay attention to stakeholders. Carbon Emission Disclosure (CED) reporting is proof of the company's responsibility for the support that has been given by stakeholders (Hanifah, 2018).

Firm size is often considered as one of the important factors that determine the extent to which companies disclose carbon emissions (Mujiani et al., 2019). Firm Size is a value that indicates the size of the company. According to (Mulya & Rohman, 2020) large companies are considered more capable of meeting the costs of disclosing carbon emissions because they have sufficient resources, so in this case the community as a part that plays a role in business continuity assumes that large companies will be more committed to disclosing carbon emissions than small companies. This is in line with research (Rusdi & Helmayunita, 2023) that company size has a positive and significant effect on carbon emission disclosure. However, this contradicts research (Septriyawati & Anisah, 2019) which states that company size has no effect on carbon emission disclosure.

Therefore, it is necessary to conduct a research to conduct a comprehensive literature study on the effect of firm size on Carbon Emission Disclosure (CED). This study has several research gaps with several previous studies, namely in some previous research results that are still inconsistent or unclear, so further research is needed to overcome the inconsistencies that occur. In addition, research on the effect of Firm Size on Carbon Emission Disclosure has a high level of urgency because Carbon Emission Disclosure not only affects the company's image and stakeholder trust, but companies can identify opportunities to improve corporate governance, reduce financial risk, and strengthen their position in the face of increasingly complex environmental and social challenges. Thus, the author will conduct a research study with the title "Literature Review of the Effect of Firm Size on Carbon Emission Disclosure (CED)".

LITERATURE REVIEW

Firm Size

Firm size is an important indicator that reflects the size of the company based on total assets and annual revenue (Yadav et al., 2022). Firm size is divided into three categories, namely, large firms, medium firms and small firms (Milovanović et al., 2022). Firm size affects its capacity and resources to disclose carbon emissions. Large companies tend to have more adequate financial resources, technology and expertise, which allows them to disclose carbon emissions in a more detailed and transparent manner (Hastria & Rasuli Nurazlina, 2014). In addition, large companies also face greater pressure from stakeholders to make these

disclosures comprehensively in order to maintain their legitimacy and reputation in the eyes of the public and investors (Mulya & Rohman, 2020)

Empirical research shows that large companies are more likely to disclose their carbon emissions transparently because they have more resources and face greater pressure from stakeholders. According to (Rusdi & Helmayunita, 2023) found that company size has a positive and significant influence on CED, because large companies often have special teams responsible for environmental reporting. However, some studies show mixed results, where some studies state that company size does not always affect the disclosure of carbon emissions (Septriyawati & Anisah, 2019). These mixed results suggest that while company size is an important factor, other factors such as government regulation, environmental awareness, and corporate culture also influence carbon emissions disclosure.

Carbon Emission Disclosure (CED)

Carbon Emission Disclosure (CED) is part of the disclosure of corporate social responsibility towards the environment. CED is part of the additional reporting issued in the Statement of Financial Accounting Standards (PSAK) No.1 revised in 2009 with the aim of reducing carbon emissions and addressing public pressure to reduce the impact of environmental damage due to company operations that emit a lot of carbon emissions (Pande et al., 2023). This disclosure shows the transparency and accountability of companies in managing their environmental impacts, as well as a form of contribution to climate change and global warming (Simamora & Mulyani, 2023). The high emissions resulting from company activities make stakeholders expect handling actions from the company, therefore, companies make environmental-related disclosures in the form of carbon emissions as an effort to achieve corporate accountability (Ramadhani & Astuti, 2023).

The implementation of CED has many benefits not only for companies but also the environment and social (Alifiani & Suryaningrum, 2020). However, in Indonesia, the disclosure of carbon emissions is still in the form of voluntary disclosure so that not all companies have reported, especially companies that have a close relationship with the environment and use high natural resources (Pande et al., 2023). However, this disclosure is expected to reduce the volume and impact of carbon emissions caused by companies (Nisa, 2023). In addition, these disclosures can help companies identify opportunities to improve environmental governance and reduce risks associated with regulations and public perceptions of their environmental performance. Therefore, CED is not only a response to external pressures, but also part of a sustainable business strategy that can provide economic benefits to the company.

Stakeholder Theory

Stakeholder theory was introduced by Freeman (1983) and suggests that corporate management is influenced by a much more complex environment than just the concept of shareholder value (Herold, 2018). Stakeholder theory explains that companies do not only operate for their own interests, but must also provide benefits to their stakeholders, including employees, creditors, consumers, suppliers, government, and society (Resya et al., 2021). The existence of the company is greatly influenced by the support of these stakeholders, and therefore, maintaining harmonious relationships is important for the sustainability of the company. One way to maintain this relationship is to express concern for the environment through Carbon Emission Disclosure (CED), which is evidence of the company's responsibility

to the environment and a tool to meet stakeholder expectations regarding environmental sustainability (Yusuf & Jateng, 2020).

In practice, disclosure of carbon emissions reflects the company's commitment to environmental sustainability and fulfils the expectations of stakeholders who are increasingly concerned about the impact of company operations on the environment (Wahyuningrum et al., 2024a). Some stakeholders will be a source of enormous opportunities if their expectations are met (Pradesa et al., 2021). Companies that are transparent in environment-related disclosures are more likely to get full support from stakeholders, which in turn can increase the company's reputation as well as its economic value. Thus, good environmental management through CED not only maintains harmonious relationships with stakeholders but also supports the sustainability of the company's overall operations (Nisa, 2023).

METHODS

This research is a qualitative study using the literature review method. Literature review is a literature search and research by reading and examining various journals, books, and various other published manuscripts related to the research topic to produce a paper related to a particular topic or issue (Pratiwi et al., 2020). This literature review method provides a strong foundation for in-depth exploration of research topics, with the hope of providing new insights and significant contributions to the existing literature (Juniarti et al., 2023). This study aims to understand the relationship between company size and Carbon Emission Disclosure (CED) with a focus on literature published between 2020 - 2024. The literature reviewed includes articles from international and national journals with a total of 18 articles, which provide a comprehensive and up-to-date view on this topic. By referring to the literature study conducted between 2019 and 2024, this research highlights the relationship of firm size in Carbon Emission Disclosure (CED) as well as how this factor affects corporate environmental policies.

RESULT

Tabel 1. Summary of Key Findings from the Literature on Firm Size and CEDs

Title	Authors & Year	Results
The Effect Of Firm Size, Leverage And Industry Type On Carbon Emission Disclosure: Empirical Study On Non-Service Industry Companies Listed On The IDX In 2018-2020	(Rusdi & Helmayunita, 2023)	Firm size and industry type have a positive and significant effect on carbon emission disclosure.
The Effect Of Leverage, Profitability, Firm Size And Environmental Performance On Corporate Carbon Emission Disclosure (Empirical Study On Mining Companies Listed On The IDX 2018-2020)	(Sekarini & Setiadi, 2021)	Firm size has a positive effect on carbon emission disclosure.
The Effect Of Firm Size, Leverage, And Profitability On Carbon Emission Disclosure	(S. D. A. Putri & Amin, 2022)	The firm size variable has a significant positive effect on carbon emission disclosure.
The Influence Of Firm Size, Profitability, Leverage, And Share Ownership On Csr	(Gandawidhaya & Salim, 2021)	Firm size has a significant positive effect on CSR because large companies that have better

		reporting information systems tend to have the resources to produce more information and the cost of producing this information is lower.
Company Size Moderates The Effect Of Industry Sensitivity And Profitability On Carbon Emission Disclosure	(Maharani et al., 2022)	Firm size has a positive and significant effect on carbon emission disclosure.
Company Size, Profitability, And Growth On Abnormal Stock Return With Carbon Emission Disclosure	(Resya et al., 2021)	The results of the path test on the effect of Company Size on CED show a significant positive effect. This proves that a high Company Size will increase CED.
Firm Size, Leverage, Liquidity, And Profitability Effect On The Disclosure Of Carbon Emissions (Study On Non-Banking LQ-45 Index Stocks On The Indonesia Stock Exchange 2017-2021)	(Muniroh & Sasongko, 2023)	Firm Size affects the disclosure of carbon emissions with a significance value of 0.031 which is less than 0.05. The level of leverage has an effect on the disclosure of carbon emissions.
ISO Certification, Firm Characteristics And Carbon Emission Disclosure	(Chariri et al., 2023)	Firm size positively affects carbon emission disclosure.
The Effect Of Financial Distress And Firm Size On Carbon Emission Disclosure	(Kartikasary et al., 2023)	Firm size has positive relationship with carbon emission disclosure. Large firm has enough resource to participate actively in carbon emission reduction.
The Influence Of Profitability, Company Size, Media Exposure, And Leverage On Carbon Emissions Disclosure	(Syahdanti & Marietza, 2024)	Large companies, valued by total assets, can increase carbon emission disclosure.
The Effect Of Carbon Tax, Capital Expenditure And Firm Size On Carbon Emission Disclosure On The Indonesia Stock Exchange	(S. A. Putri et al., 2024)	Large corporations generally possess greater financial resources, which enables them to invest in reporting systems that are more sophisticated and precise. As a result, they are more motivated to disclose carbon emissions in a plain and precise manner.
Carbon Emissions, Firm Size, And Corporate Governance Structure: Evidence From The Mining And Agricultural Industries In Indonesia	(Nasih et al., 2019)	The relationship between disclosure of carbon emissions and firm size has a positive and significant effect on the carbon emissions disclosure.
The Influence Of Environmental Performance, Company Size, And Independent Commissioners On Carbon Emission Disclosure	(Syahdanti & Marietza, 2024)	Big company more aware will not quite enough answer in disclose information carbon in a way volunteer that in is implementing

		activities , there are exists decline quality environment.
Carbon Emission Disclosure: Testing The Influencing Factors	(D. Putri et al., 2021)	Thus, a larger company does not determine whether the company will make more extensive carbon emission disclosure than a smaller company.
Carbon Emission Disclosure And Profitability – Evidence From Manufacture Companies In Indonesia	(Salbiah & Mukhibad, 2018)	This research was evidence that size has a significant positive effect on carbon emission disclosure.
Carbon Emission Disclosure By Non-Financial Companies In Indonesia: A Perspective Of Stakeholder Theory	(Widarjo et al., 2024)	Companies size have significant effects on carbon emission disclosure.
The Influence Of Carbon Emission Disclosure, Green Intellectual Capital, And Environmental Performance On Firm Value With Moderation Of Firm Size	(Fedrix et al., 2024)	Larger companies may have greater resources and capabilities to implement more effective environmental practices and gain greater benefits from those efforts.
The Influence Of Growth, Firm Size, And Profitability On Carbon Emission Disclosure (Empirical Study Of Industrial Sector Manufacturing Companies Listed On The Indonesia Stock Exchange In 2019 - 2022)	(Puspitaningtyas & Ratnawati, 2024)	Firm size has an impact on disclosure of carbon emissions

DISCUSSION

Relation between Firm Size and CED

Company size is often considered as one of the main determinants of carbon emission disclosure (CED). The larger the company size, the more likely it is to make more detailed disclosures related to its environmental impacts, including carbon emissions. Company size, which is usually measured by total assets and revenues, reflects the capacity of a company's resources to implement sustainability and transparency programmes. Large companies tend to have better financial capacity to facilitate the measurement, reporting and mitigation of carbon emissions than smaller companies.

A study by (Rusdi & Helmayunita, 2023) found that company size has a positive and significant influence on carbon emissions disclosure. This research suggests that large companies have the ability to allocate larger budgets and resources for environmental reporting. In addition, large companies often have specialised teams or departments responsible for sustainability and environmental reporting, which can enhance their ability to meet carbon emissions reporting standards.

In addition to greater resources, large companies are also more susceptible to scrutiny from stakeholders, including governments, investors and the general public. Therefore, large companies tend to be more proactive in disclosing carbon emissions in response to public expectations and increasingly stringent regulations. This is in line with research (S. D. A. Putri & Amin, 2022) which states that large companies are more likely to disclose information related to their carbon emissions transparently, due to greater stakeholder pressure and higher public expectations.

However, not all studies show the same results, (Septriyawati & Anisah, 2019) found that company size does not always have a significant effect on carbon emissions disclosure. This study revealed that other factors such as regulatory compliance, market pressure, and company policy can also influence a company's decision to undertake CED. In some cases, small companies may be highly motivated to disclose their carbon emissions due to the need to compete with larger companies that are more dominant in terms of environmental reputation. In addition, companies operating in industries that are highly sensitive to environmental impacts, such as energy and mining, are more likely to report carbon emissions regardless of company size. In this case, industry sensitivity to environmental issues is also an important factor that can moderate the relationship between firm size and CED.

Linkage of Stakeholder Theory to Company Size and CED Reporting

Stakeholder theory provides a strong basis for understanding how companies, especially large companies, respond to stakeholder demands through carbon emissions disclosure. According to this theory, companies are not only responsible to shareholders, but also to all parties who have an interest in the sustainability of company operations, such as employees, consumers, suppliers, local communities, and governments (Resya et al., 2021).

Large companies have a wider reach and a greater impact on society and the environment, often under more scrutiny from various stakeholders. Stakeholders expect large companies to make significant contributions to climate change mitigation efforts through transparent and comprehensive disclosure of carbon emissions. (Mulya & Rohman, 2020) stated that pressure from stakeholders for large companies is usually higher, especially in terms of maintaining social legitimacy and corporate reputation. Thus, CED disclosure becomes an important tool for large companies to prove their commitment to environmental responsibility and maintain good relationships with stakeholders.

For example, governments as key stakeholders often introduce stricter regulations and standards regarding carbon emissions to ensure that large companies fulfil their environmental responsibilities. Large companies that do not make adequate CED disclosures may face the risk of legal sanctions, as well as loss of trust from investors and consumers, which may ultimately affect their financial performance. On the other hand, companies that proactively disclose their carbon emissions demonstrate a commitment to sustainability, which can improve the company's reputation in the eyes of the public and help secure support from stakeholders (Yusuf & Jateng, 2020).

Stakeholder theory also emphasises the importance of maintaining social legitimacy through CED disclosure. Good disclosure of carbon emissions reflects a company's commitment to minimising negative impacts on the environment, thereby increasing the trust of the public and other stakeholders in the company. Therefore, large companies that face pressure from various stakeholders tend to be more motivated to conduct transparent and accurate CED reporting to meet these expectations (Wahyuningrum et al., 2024b).

Impact of Company Conducting CED Reporting

Disclosure of carbon emissions brings various positive impacts to the company. Firstly, CED can improve a company's reputation in the eyes of the public and investors. Companies that are transparent in their environmental reporting tend to be more trusted by consumers

and other stakeholders. This can increase customer loyalty and strengthen the company's position in a market that is increasingly concerned with sustainability issues.

Second, CED helps companies identify opportunities to improve operational efficiency and environmental governance. By conducting accurate and systematic reporting on carbon emissions, companies can find areas where they can reduce their environmental impact, which in turn can reduce long-term operational costs and regulatory risks.

Third, CED can also help companies reduce the financial risks associated with changing regulations and public perceptions of a company's environmental performance. In many countries, including Indonesia, regulations related to carbon emissions are increasingly stringent. By making voluntary disclosures, companies can better prepare themselves for future regulations and maintain the sustainability of their operations.

CONCLUSION

Carbon Emission Disclosure (CED) is important for companies to demonstrate their commitment to environmental sustainability. Company size plays a significant role, with larger companies more likely to be able and pressurised by stakeholders to disclose carbon emissions transparently. In addition to enhancing reputation, CED disclosure helps companies identify operational efficiencies, reduce financial risks and comply with environmental regulations. This is consistent with stakeholder theory, which emphasises a company's responsibility to the various parties involved.

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