



Journal of Contemporary Accounting

Volume 4 | Issue 1

Carbon emission disclosure in Indonesia: Viewed from the aspect of board of directors, managerial ownership, and audit committee

Rifqi Nadhif Hafidh Simamora

Department of Accounting, Universitas Islam Sumatera Utara, Medan, Indonesia
rifqinadhif18@gmail.com

Safrida

Department of Management, Universitas Islam Sumatera Utara, Medan, Indonesia
safrida@fe.uisu.ac.id

Sri Elviani

Department of Accounting, Universitas Islam Sumatera Utara, Medan, Indonesia
srielviani@fe.uisu.ac.id

Follow this and additional works at: <https://journal.uui.ac.id/jca>

Copyright ©2022 Authors.

Carbon emission disclosure in Indonesia: Viewed from the aspect of board of directors, managerial ownership, and audit committee

Rifqi Nadhif Hafidh Simamora¹, Safrida², Sri Elviani^{3*}

^{1,3}Department of Accounting, Universitas Islam Sumatera Utara, Medan, Indonesia

²Department of Management, Universitas Islam Sumatera Utara, Medan, Indonesia

JEL Classification:

Q53; Q56

Keywords:

Audit committee, board of directors,
carbon emission disclosure,
managerial ownership

***Corresponding Author:**

srielviani@fe.uisu.ac.id

DOI:

[10.20885/jca.vol4.iss1.art1](https://doi.org/10.20885/jca.vol4.iss1.art1)

Copyright ©2022



This is an open access under
CC-BY-SA LICENSE

Abstract

This study aims to determine the effect of the board of directors on the disclosure of carbon emission, the effect of the managerial ownership on the disclosure of carbon emission, and the influence of the audit committee on disclosure of carbon emission in mining companies on the Indonesia Stock Exchange. The data sources used in this study are mining sector companies that have been listed on the Indonesia Stock Exchange (IDX) and have been published as sustainable annual financial reports for the period 2017 to 2020, and the data analysis used is multiple linear regression. The results of the study indicate that the board of directors has a positive and significant effect on disclosure of carbon emission; the managerial ownership has no significant effect on disclosure of carbon emission, and the audit committee has a positive and significant effect on disclosure of carbon emission.

Introduction

Global warming is a natural phenomenon caused by an increase in the average temperature of the atmosphere that causes changes in climate. The increase in the average temperature of the atmosphere comes from the increase in greenhouse gas emission (carbon emission) resulting from human activities in the company operational activities. The Data of the World Resources Institute (WRI) show that in 2015 Indonesia was a producer of the sixth largest greenhouse gas emission in the world after the United States, the European Union, China, India, and Russia. Throughout 2012 to 2017, according to Brown to Green Report 2018 data there was an increase in carbon emission by 18% in Indonesia. The increase was caused by the increases of emission from electricity power, industrial sectors and transportation (Wijaya, 2020).

The Indonesian government has committed to reduce greenhouse gas emission by 29-41% in the year 2030, based on the issuance of the Republic of Indonesia Law Number 40 of 2007 concerning Ratification of the Kyoto Protocol for the UN Framework Convention on Climate Change. Law Number 40 of 2007 Article 74 paragraph 1 states that the limited company, namely the company running in the field of natural resources must carry out social and environmental responsibilities (Republik Indonesia, 2007). The law was issued by the Indonesian government aimed at minimizing environmental damage caused by industrial activities, as it is undeniable that the increasingly rapid industrial growth will have a positive linearity with the increasing of greenhouse gas emission resulting from company production operational activities.

Carbon emission disclosure is one form of the company contribution to the problem of global warming and is usually reported in an annual report or in a sustainability report. Through carbon emission disclosure, stakeholders will assess that the company is able to be responsible for conveying information about environmental performance. According to Giannarakis (2015), companies have an important role in reducing their greenhouse gas emission because stakeholders such as shareholders and consumers will put pressure on companies to reduce their greenhouse gas emission. One way to assess and to evaluate a company portfolio is to analyse the carbon emission disclosure they present (EY & Boston College Centre, 2014). However, in Indonesia, the practice of carbon emission disclosure is still voluntary disclosure or is carried out voluntarily, and this practice is rarely carried out by business entities (Jannah & Muid, 2014). So, not many companies are willing to disclose the carbon emission they produce.

Although carbon emission disclosure is still voluntary, companies that are willing to disclose carbon emission in financial reports have added value in the eyes of both foreign and local investors (Prakitri & Zulaikha, 2016). In addition, Falih (2018) in his research states that companies that are willing to disclose carbon emission are considered serious in preserving the environment as well as thinking about the impacts caused by the company operational activities, the majority of which are in contact with the environment.

At least issuers who carry out carbon emission disclosure are certainly contrary to the theory of legitimacy. Kusumawardani and Sudana (2017) state that in legitimacy theory, companies are assumed to sustainably ensure that the operations carried out by the company do not deviate from the norms in society and can be legitimized by outsiders. In addition, the minimum number of companies willing to disclose carbon emission can be caused by the high cost of disclosing these emissions which may be detrimental to the company, and its voluntary nature supports companies to consider the carbon emission disclosure (Amaliyah & Solikhah, 2019).

The importance of carbon emission disclosure encourages academicians to conduct research on carbon emission disclosure including those conducted by Akhiroh and Kiswanto (2016), Chang and Zhang (2015), Halimah and Yanto (2018), and Luo et al. (2013) using various factor as determining carbon emission disclosure. Their research uses environmental performances and corporate governance characteristics that are suspected to have an influence on carbon emission disclosure. The characteristics of corporate governance in their research include the managerial ownership, the institutional ownership, the independent commissioners, the boards of directors, and the audit committee.

Akhiroh and Kiswanto (2016) state that the institutional ownership and the independent commissioners do not affect carbon emission disclosure, while the managerial ownership and the audit committees have a positive influence on carbon emission disclosure. Meanwhile, Ayoib et al. (2015) do not find any effect between the audit committee and environmental disclosure on companies in Malaysia. Chang and Zhang (2015) analyse the factors of environmental information disclosure in industries with high pollution intensity in China, and they find that top management ownership has an insignificant negative effect on environmental disclosure, while the institutional ownership and the ownership concentration have a significant positive effect on environmental disclosure.

Indonesian companies that disclose their environmental performance, especially carbon emission, are very rare. So, research related to the role of corporate in the disclosure of carbon emission in Indonesia is rarely found. In addition, in previous research, there are still inconsistencies in the findings of the relationship between the corporate governance and the disclosure of carbon emission. So, in this study the disclosure of carbon emission is an interesting issue to study because the company operational activities cannot be separated from environmental problems, especially for companies that have a large impact on the environment, such as the oil, gas and coal industry. Therefore, this study will examine the disclosure of carbon emission in terms of the aspects of the board of directors, the managerial ownership, and the audit committee.

Literature Review

Legitimacy Theory

Legitimacy is considered important for the company because the community legitimacy to the company is a strategic factor for the company future development (Marpaung et al., 2022). According to O'Donovan (2002) an organizational legitimacy can be seen as something that society gives to companies and something that companies want or seek from society. Thus, legitimacy has benefits to support the survival of a company. Legitimacy to be obtained by the company from the community is that the activities of the company operations are in accordance with the limits and norms based on applicable regulations (Deegan & Unerman, 1989). A company that gives attention to the social norms could be easily legitimate. Legacy symbolizes what the company really wants from the community, derived from the theory of legitimacy, concerning carbon emission disclosure, namely the reaction of the company to the pressure exerted by the community for its existence. The company in this case wants to give confidence to the environment that the activities that the company does are not against the norms and still comply with the applicable provisions.

To obtain legitimacy, companies must first reduce their carbon footprints and then adequately disclose their commitments and their efforts in reducing carbon emission. Even if companies do not achieve their carbon reduction targets, credible ones are still being demanded by the relevant stakeholders (Chu et al., 2013; Datt et al., 2019). Lack of performance will give the impression that the company is trying to hide bad news, or will be seen as evidence of irresponsible corporate behaviour, thereby increasing the crisis of legitimacy (Datt et al., 2019). On the other hand, carbon creativity is largely voluntary; some companies may use it for legitimacy, and they may choose items that are favourable to the public.

Carbon Emission Disclosure

Carbon performance is a managerial activity related to carbon emission, namely performance that describes quantitative emission of greenhouse gas (GHG) that can change the climate as well as the steps taken by companies as an effort to reduce carbon emission in the air (Velte et al., 2020). Environmental disclosure includes the intensity of greenhouse gases and energy use, corporate governance and strategies in relation to the impact of climate change (Cotter et al., 2011). Choi et al. (2013) decided on five groups related to climate change and carbon emission, namely: risks and opportunities of climate change (GHG/Greenhouse Gas), EC/Energy Consumption, RC/Reduction and Cost, and AEC/Accountability of Emission Carbon. Table 1 is a checklist of carbon emission disclosures according to Choi et al. (2013).

Table 1. Carbon Emission Disclosure Checklist

Category	Item	Remarks
<i>Climate Change: Risks and Opportunities</i>	CC-1	Assessment/description of risks (regulations both specific and general) related to climate change and the actions taken to manage these risks.
	CC-2	Current (and future) assessment/description of the finance, business and opportunity implications of climate change
<i>GHG/Greenhouse Gas Emission</i>	GHG-1	Description of the methodology used to calculate greenhouse gas emission (eg GHG protocol or ISO).
	GHG-2	Existence of external verification of GHG emission quantity calculation by whom and on what basis.
	GHG-3	Total greenhouse gas emission (metric tons of CO ₂ -e) produced.
	GHG-4	Disclosure of scope 1 and 2, or 3 of direct GHG emission.
	GHG-5	Disclosure of GHG emission by origin or source (eg coal, electricity, etc.).
	GHG-6	GHG emission disclosure by facility or segment level.

Category	Item	Remarks
EC/ <i>Energy Consumption</i>	GHG-7	Comparisons of GHG emission with those of previous years.
	EC-1	The amount of energy consumed (eg tera-joules or Peta-joules).
	EC-2	Calculation of energy used from renewable resources.
RC/ <i>Reduction of Green House Gas and Cost</i>	EC-3	Disclosure by type, facility or segment.
	RC-1	Details of the plan or strategy to reduce GHG emission.
	RC-2	Details of the current GHG emission reduction target level and emission reduction targets.
	RC-3	The emission reductions and costs or savings achieved today as a result of the emission reduction plan.
AEC/ <i>Accountability of Carbon Emission</i>	RC-4	Biaya Future emission that is taken into account in capital expenditure planning.
	ACC-1	Indication that the committee board (or other executive body) has responsibility for actions related to climate change.
	ACC-2	Description of the mechanism by which the board (or other executive body) reviews the company developments related to climate change

Source: Choi et al. (2013).

Board of Directors and Carbon Emission Disclosure

Based on Article 1 of Law No. 40 of 2007 concerning limited companies, the board of directors is part of the company that has the authority and responsibility for managing the company in terms of company needs, in line with the company goals and objectives, as well as being the company representative, both inside and outside the court, in line with the provision articles of association. The board of directors is responsible for ensuring that the company operations run in accordance with applicable laws and regulations and the board of directors is also responsible for obtaining company legitimacy from the public and from the policy of the stakeholders.

The board of directors is responsible for gaining legitimacy from all stakeholders. To obtain legitimacy, companies must carry out their social responsibility to the community, namely by disclosing carbon emission. The size of the board of directors describes the corporate governance, because the decision by the board of directors should be in line with the opinions of the members of the board of directors (Krisnawanto & Solikhah, 2019). The bigger the size of the board of directors, the better the management of the company is, so the ability of the company to carry out its environmental responsibilities will be good. (Akhiroh & Kiswanto, 2016) find that the board of directors influences the disclosure of carbon emission. According to legitimacy theory, companies under a high level of legitimacy threat tend to take action to counter the negative effects of their operations on the environment to show that they care about climate change and their business activities are in line with social values. This argument leads to the expectation that carbon assurance is more likely when companies are under greater threat to their legitimacy (Datt et al., 2019). So, in this study the hypothesis proposed is;

H₁: The board of directors has an influence on carbon emission disclosure

Managerial Ownership and Carbon Emission Disclosure

Managerial ownership is the number of shares owned by management from the total outstanding shares. Kusumawardani and Sudana (2017) state that managerial ownership means that managers in a company are shareholders. Each decision taken by the manager will determine the effects that will be received by shareholders, so that managers as well as shareholders will try to increase the value of the company in order to create prosperity for themselves as the shareholders of the company.

Stakeholder theory explains the company relationship with stakeholders, where this relationship makes management try to be open to all company activities. Managerial ownership provides optimal control over management and the pressure to disclose social-environmental responsibility is also high (Akhiroh & Kiswanto, 2016). According to Krisnawanto and Solikhah (2019), high institutional ownership will increase company supervision, so it tends to reveal all company activities, which can increase a positive image for stakeholders. Chang and Zhang (2015) find the effect of institutional ownership on environmental disclosure. A high institutional ownership indicates high voting rights for institutional investors in companies to conduct carbon emission disclosure. This is in line with the research done by Pratiwi (2016) showing that the institutional ownership has a positive effect on carbon emission disclosure. A study carried by Chu et al. (2013) reported that managerial ownership is significantly related to CSR, because the company is expected to have a higher commitment. Hence, having been engaged in socially responsible activities following such expectations to achieve legitimacy, these companies report a large amount of corporate social information. Therefore, following the principle of legitimacy theory it is expected that companies will report more information on carbon emission. This is stated in the form of the following hypothesis:

H₂: The Managerial ownership has influence on carbon emission disclosure

Audit Committee and Emission Disclosure

Companies that operate with an audit committee encourage companies to implement the principles of GCG, including the principle of transparency. Auditor work experience also affects fraud risk assessment for the company (Hamdani et al., 2020). The transparency presented by the audit committee is certainly not just accounting transparency, but transparency related to the use of company cash to improve environmental performance. The audit committee is responsible for delivering accurate and comprehensive information regarding the condition of the company. According to the theory of public legitimacy, the public does not demand financial performance reports, but the public demands environmental performance reports by the company (Datt et al., 2019).

Aniktia and Khafid (2015) state that companies are required to be open to all activities carried out, then report on these activities. The number of the audit committee is very important for the supervision and the control of the company so that the existence of an audit committee in a company will increase the effectiveness of supervision including the practice of environmental disclosure, therefore, the existence of an audit committee also affects the disclosure of carbon emission. This is in line with Akhiroh and Kiswanto (2016) who find evidence that the audit committee has a positive effect on the disclosure of carbon emission. This is stated in the form of the following hypothesis:

H₃: The audit committee has influence on carbon emission disclosure

Research Method

We conducted this research to find out about carbon emission disclosure in mining companies. Our research data were obtained and downloaded from <http://www.idx.co.id> and <http://www.finance.yahoo.com> during the observation period of 2017-2020. In determining the sample, we applied the following criteria limitations: (1) Company data must be available; (2) Presenting audited financial reports; and (3) the company explicitly discloses carbon emission (including at least one policy related to carbon/greenhouse gas emission or discloses at least one item of carbon emission disclosure). Based on the predetermined sample criteria of 47 companies during the observation period, 45 companies were selected during the observation period to be the sample of this study. For sample testing, we used a statistical model of multiple regression analysis using spss 20 software.

The hypothesis testing of this study is done by multiple regression analysis. The formula of multiple linear regression analysis used for this test is as follows:

$$CE_Disc = \alpha + \beta_1 Board_{1it} + \beta_2 Own_{2it} + \beta_3 Audit_{3it} + e_{it} \dots\dots\dots 1$$

Remarks :

CE_Disc= Carbon emission disclosure

α = Constant

$\beta_1 - \beta_3$ = Regression Coefficient

Board = Board of Director

Own = Ownership

Audit = Audit Committee

e = Error

Results and Discussion

Multicollinearity Test

The multicollinearity test was carried out to determine the existence of a relationship or correlation between each variable. In this study, the multicollinearity test was carried out using the tolerance value and the value of the Variance Inflation Factor (VIF). Multicollinearity occurs if there is a high linear relationship between the independent variables, then the standard error of the regression coefficient will be greater and will result in a wider confidence interval for parameter estimation, thus, it opens the possibility of errors.

Table 2. Multicollinearity Test

Independent Variables	Collinearity Statistics	
	Tolerance	VIF
Board of Directors	.939	1.065
Managerial Ownership	.999	1.001
Audit Committee	.939	1.065

Dependent Variable: Carbon emission disclosure

Based on Table 2, it can be seen that the tolerance value of the board of directors' variable is 0.939 and the VIF value is 1.065. For the managerial ownership variable, the tolerance value is 0.999 and the VIF value is 1.001 and the audit committee variable shows a tolerance value of 0.939 and a VIF value of 1.065. It can be concluded that the tolerance value of the board of directors, the managerial ownership and the audit committee variables > 0.10 and the VIF value < 10, so that there is no correlation between the independent variables, and so the research regression model can be continued.

Hypothesis Test Results

Table 3. Result of Regressions Analysis

	B	P-value	Results
Board of Directors	.040	.000***	H1 is supported
Managerial ownership	-.176	.059*	H2 is supported
Audit Committee	.120	.000***	H3 is supported
R Square	.366		
F-statistic	23.447	.000	
Notes: * p , 0.1; ** p , 0.05; *** p , 0.01			

Based on the Table 3, it can be seen that the results are of P -value <0.01 . These results support the first hypothesis in this study which states that the board of directors has an influence on the disclosure of carbon emission. The results of this study are in line with previous research conducted by Akhiroh and Kiswanto (2016), Datt et al. (2019), and Krisnawanto and Solikhah (2019). Thus, companies that have a large number of the boards of directors will find it easier to carry out carbon emission disclosure. Because of the increasing number of the boards of directors, it becomes easier to monitor the company operational impact on the environment and to implement various ways to overcome the environmental impacts related to carbon emission (Datt et al., 2019). Managers fear that if they do not disclose, they may suffer from serious reputational risks and from a legitimacy crisis. This creates pressure for firms to disclose, as carbon assurance is desirable as a demonstration of good corporate citizenship (Datt et al., 2019).

The second hypothesis is the managerial ownership of carbon emission disclosure, of which results in P -value $0.059 > 0.1$. Based on this result, it can be interpreted that managerial ownership has significant effect on carbon emission disclosure. So, based on this result, the second hypothesis in this study, which states that managerial ownership has an influence on the disclosure of carbon dioxide emission is supported. This study supports the results of previous studies conducted by Akhiroh and Kiswanto (2016), Chang and Zhang (2015), and Pratiwi (2016). This condition is caused by most of the companies having below average managerial ownership. The results from this study are not in line with the legitimacy theory, namely the existence of managerial ownership, expected to make management more and provide benefits to stakeholders from carbon emission disclosure.

A possible reason behind this unexpected result is the company's assets, such as large investments in carbon emission or energy reductions. Therefore, management may think less about reporting carbon emission information by not reporting such information can save costs (Chu et al., 2013).

The influences of the audit committee on carbon emission disclosure is obtained from the P -value <0.01 . It can be concluded that the audit committee has a positive and significant impact on carbon emission disclosure with a significant value 0.001. The audit committee itself in the company has an important role, namely as a supervisor of the company management. The audit committee can also put pressure on management to make carbon emission disclosure in terms of company operations, one of which is environmental performance, especially in terms of climate change.

An audit committee with financial/accounting expertise is an important requirement for the audit committee to carry out an effective oversight role (Chariri et al., 2018; Marpaung et al., 2022). In addition, the presence of an independent audit committee plays an important role in monitoring management, especially in disclosing company information, including information on carbon emission (Chariri et al., 2018). This is reasonable because the independent audit committee has no economic or personal relationship with management, so it tends to work independently and objectively from management influence. Furthermore, the independent audit committee has more opportunities to control and to reduce management opportunities to retain information for their own benefit. The results of this study are in line with previous research conducted by Aniktia and Khafid (2015) and Akhiroh and Kiswanto (2016).

Conclusion

In this study, we conclude that the board of directors and the audit committee have a significant positive influence on carbon emissions disclosure, while the managerial ownership has no influence on carbon emission disclosure. Simultaneous test results show that the board of directors, the managerial ownership and the audit committee have an influence on jointly influencing carbon emission disclosure. The implication of this research is that carbon emission disclosure is a form of the company contribution to the global warming problem that must be reported in an annual

report or in a sustainable report. Through carbon emission disclosure, stakeholders will judge that the company is able to be responsible for conveying information about the performance of the environmental in preventing global warming. 41% in 2030. This research is limited only to the board of directors, the managerial ownership, and the audit committee; furthermore, this research can be done by adding variables such as profitability, company size, financial distress, and for the board of directors it can be proxied by gender and age.

References

- Akhiroh, T., & Kiswanto. (2016). The determinant of carbon emission disclosures. *Accounting Analysis Journal*, 5(4), 326–336.
- Amaliyah, I., & Solikhah, B. (2019). Pengaruh kinerja lingkungan dan karakteristik corporate governance terhadap pengungkapan emisi karbon. *Journal of Economic, Management, Accounting and Technology*, 2(2), 129–141. <https://doi.org/10.32500/jematech.v2i2.720>
- Aniktia, R., & Khafid, M. (2015). Pengaruh mekanisme good corporate governance dan kinerja keuangan terhadap pengungkapan sustainability report. *Accounting Analysis Journal*, 4(3), 1–10.
- Ayoib, C.-A., Peter, N., & Nosakhare, O. (2015). Directors culture and environmental disclosure practice of companies in Malaysia. *International Journal of Business and Technopreneurship Volume*, 5(1), 99–114.
- Chang, K., & Zhang, L. (2015). The effects of corporate ownership structure on environmental information disclosure—empirical evidence from unbalanced panel data in heavy-pollution industries in China. *WSEAS Transactions on Systems and Control*, 10, 405–414.
- Chariri, A., Januarti, I., & Yuyetta, E. N. A. (2018). Audit committee characteristics and carbon emission disclosure. *E3S Web of Conferences* 73, 1–5. <https://doi.org/10.1051/e3sconf/20187302001>
- Choi, B. B., Lee, D., & Psaros, J. (2013). An analysis of Australian company carbon emission disclosures. *Pacific Accounting Review*, 25(1), 58–79. <https://doi.org/10.1108/01140581311318968>
- Chu, C. I., Chatterjee, B., & Brown, A. (2013). The current status of greenhouse gas reporting by Chinese companies: A test of legitimacy theory. *Managerial Auditing Journal*, 28(2), .
- Cotter, J., Lokman, N., & Najah, M. M. (2011). Voluntary disclosure research: Which theory is relevant? *The Journal of Theoretical Accounting Research*, 6(2), 77-95. Retrieved from <https://eprints.usq.edu.au/18816/>
- Datt, R. R., Luo, L., & Tang, Q. (2019). The impact of legitimacy threat on the choice of external carbon assurance: Evidence from the US. *Accounting Research Journal*, 32(2), 181–202. <https://doi.org/10.1108/ARJ-03-2017-0050>
- Deegan, C., & Unerman, J. (1989). *Financial Accounting Theory* (European edition). McGraw-Hill Education.
- EY, & Boston College Centre. (2014). Value of sustainability reporting - A study by EY and Boston College Center for Corporate Citizenship. *EYGM Limited*, 1–32.
- Falih, Z. N. (2018). *Apakah carbon emission disclosure memoderasi pengaruh ukuran perusahaan, profitabilitas dan likuiditas terhadap nilai perusahaan?* Sekolah Tinggi Ilmu Ekonomi Yogyakarta.
- Giannarakis, G. (2015). Determinants of social and environmental responsibility disclosures. *International Journal Sustainable Society*, 7(3), 266–285.

- Halimah, N. P., & Yanto, H. (2018). Determinant of carbon emission disclosure at mining companies listed in Indonesia Stock Exchange. *International Conference on Economics, Business and Economic Education*, 127–141. <https://doi.org/10.18502/kss.v3i10.3124>
- Hamdani, R., Pamungkas, S., & Kumalahadi. (2020). Pengalaman kerja dan penilaian profesional auditor: Bukti dari mahasiswa di Yogyakarta. *Mubammadiyah Riau Accounting and Business Journal*, 2(1), 154–162. <https://doi.org/10.37859/mrabj.v2i1.2072>
- Jannah, R., & Muid, D. (2014). Analisis faktor-faktor yang mempengaruhi carbon emission disclosure pada perusahaan di Indonesia (studi empiris pada perusahaan yang terdaftar di Bursa Efek Indonesia periode 2010-2012). *Diponegoro Journal of Accounting*, 3(2014), 1–11.
- Krisnawanto, K., & Solikhah, B. (2019). The determinants of carbon emission disclosure moderated by institutional ownership. *Accounting Analysis Journal*, 8(2), 135–142. <https://doi.org/10.15294/aaj.v8i2.32347>
- Kusumawardani, I., & Sudana, I. P. (2017). Faktor-faktor yang memengaruhi pengungkapan corporate social responsibility. *Jurnal Akuntansi Universitas Udayana*, 19(1), 741–770.
- Luo, L., Tang, Q., & Lan, Y.-C. (2013). Article information: Comparison of propensity for carbon disclosure between developing and developed countries: A resource constraint perspective. *Accounting Research Journal*, 26(1), 6–34. <https://doi.org/10.1108/ARJ-04-2012-0024>
- Marpaung, A. P., Harjito, D. A., Hamdani, R., & Ghazali, A. W. (2022). Boards of directors' feminism, audit committee, and corporate social responsibility. *Jurnal Ekonomi dan Bisnis*, 25(1), 16–30. <https://doi.org/10.24914/jeb.v25i1.4207>
- O'Donovan, G. (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal*, 15(3), 344–371. <https://doi.org/10.1108/09513570210435870>
- Prafitri, A., & Zulaikha. (2016). Analisis pengungkapan emisi gas rumah kaca. *Jurnal Akuntansi & Auditing*, 13(2), 155–175.
- Pratiwi, D. N. (2016). Implementasi carbon emission disclosure di Indonesia. *Jurnal Ilmiah Akuntansi dan Bisnis*, 13(2), 101–112. <https://doi.org/10.24843/JIAB.2018.v13.i02.p04>
- Undang-Undang Republik Indonesia Nomor 40 Tahun 2007 Tentang Undang-undang (UU) Tentang Perseroan Terbatas.
- Velte, P., Stawinoga, M., & Lueg, R. (2020). Carbon performance and disclosure: A systematic review of governance-related determinants and financial consequences. *Journal of Cleaner Production*, 254, 120063. <https://doi.org/10.1016/j.jclepro.2020.120063>
- Wijaya, T. (2020). *Pengaruh dewan direksi, dewan komisaris independen dan komite lingkungan terhadap pengungkapan emisi karbon pada perusahaan carbon intensive industry yang terdaftar di BEI Tahun 2016-2019*. Universitas Atma Jaya Yogyakarta.