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International Journal of Energy Economics and Policy ISSN: 2146-4553 available at http: www.econjournals.com International Journal of Energy Economics and Policy, 2021, 11(1), 101-109. Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Dwi Ratmono*, Darsono Darsono, Selviana Selviana Department of Accounting, Faculty of Economics and Business, Universitas Diponegoro, Indonesia. *Email: dwi.ratmono2@gmail.com Received: 16 July 2020 Accepted: 14 October 2020 DOI: https://doi.org/10.32479/ijeep.10456 ABSTRACT This study aims to examine and obtain empirical evidence of the factors that influence the disclosure of carbon emissions in public listed companies in Indonesia. The factors tested include carbon performance, firm size, profitability, leverage, capital expenditure, the level of asymmetry of company information and environmental performance. The population in this study are companies listed on the Indonesia Stock Exchange. The sample selection method uses a purposive sampling method, namely sampling based on criteria: publishing annual reports and sustainability reports in 2013-2017 and disclosing carbon emissions explicitly. The final sample in this study were 9 companies. The results showed that company size and capital expenditure had a positive and significant effect on carbon emission disclosure. Meanwhile, profitability and leverage have a negative and significant effect. The results also showed that carbon performance, the level of information asymmetry and environmental performance did not significantly influence the disclosure of carbon emissions. Keywords: Carbon Emissions Disclosure, Carbon Performance, Environmental Disclosures, Environmental Performance JEL Classifications: Q51, Q56, M41 1. INTRODUCTION Current business developments are accompanied by emerging environmental issues, one of which is climate change. Climate change exposes businesses to unpredictable strategic and operational risks (Marsh and McLennan Companies, 2018). Climate change triggers changes in the quantity of objects such as snow, ice and frozen land which have an impact on changes in the hydrological system, water sources, coastal zones and oceans as well as an increase in the earth's temperature or what is commonly known as global warming which comes from increasing numbers emissions of carbon and other greenhouse gases (The Intergovermental Panel on Climate Change, 2007). Greenhouse gases are the biggest cause of climate change due to the high use of fossil energy since the industrial revolution in 1850. Based on the Carbon Dislosure Project report (CDP, 2013), 50 of the 500 companies in the S&P 500 are responsible for nearly three-quarters of the total greenhouse gases. The many negative impacts of climate change have made the UN international organization formulate a regulation commonly known as the Kyoto Protocol as an amendment to the United Nation Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol is an international agreement from several countries as an effort to address global warming through reducing carbon emissions and other greenhouse gases with three mechanisms, namely the clean development mechanism (CDM), joint implementation (JI), and emission trading (United Nations, 1998; Indonesia Student Association, 2011). The Kyoto protocol categorizes those included in greenhouse gas emissions This Journal is licensed under a Creative Commons Attribution 4.0 International License as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCS), perfluorocarbons (PFCS) and sulfur hexafluoride (SF6). With this regulation, it is hoped that each country will participate in reducing or not increasing the amount of carbon emissions and other greenhouse gases that currently exist. Indonesia's participation in reducing greenhouse gas (GHG) emissions, which includes carbon emissions, is proven by ratifying the Kyoto Protocol and issuing Law Number 17 of 2004 ((Samiaji, 2011; Government of Indonesia, 2011; Khoiriyah, 2017). Indonesia has committed to reduce 26% of carbon emissions by 2020, which is around 0.67 giga tons. The existence of confirmation through this regulation is still lacking, this is because carbon emission disclosures are still voluntary disclosures so that not all companies actually make disclosures about the amount of carbon emissions they produce. The widespread issue of reducing carbon emissions has attracted interest in various scientific disciplines, one of which is management accounting. Management accounting plays a strategic role in the corporation and "management tools" as the responsibility for managing economic and business resources on stakeholders. An understanding of business and the environment that develops concurrently and is sustainable in the long term. This is supported by the opinion of Elkington (2001) which states that design and business practices need to unite the three basic pillars or better known as the Triple Bottom Line, namely profit (company profit), people (society) and the planet (environment). There are several specific studies on the factors associated with disclosing carbon emissions. Research by Al-tuwaijri et al. (2004), Clarkson et al. (2008), Dawkins and Fraas (2011), Raida et al. (2014), and Luo (2017) found that there is a positive relationship between carbon performance and disclosure of carbon emissions. Companies with good environmental performance will disclose more information related to the environment and their policies (Raida et al., 2014). Contrary to this, the research of Villiers and Staden (2011) found no significant relationship between carbon performance and disclosure of carbon emissions, where companies with poor performance will provide additional information regarding the causes of poor performance and take corrective action to reduce the level of information asymmetry. Choi et al. (2013), Ghomi and Leung (2013), Jannah (2014), Luo (2017) and Hermawan et al. (2018) in their research found that there is a positive relationship between company size and disclosure of carbon emissions in financial reports. The larger the size of a company, the greater the pressure on economic activity it will get. Contrary to the results of previous research,

Irwhantoko and Basuki (2016) and Cahya (2017) found that there is no relationship between company size and disclosure of carbon emissions because not all large companies disclose carbon emissions. Healy and Palepu (2001) in their research found that the level of information asymmetry has a significant effect on environmental disclosure, this is because managers use voluntary disclosure as a tool to reduce misunderstandings related to company spending. In contrast to previous studies, Villiers and Staden (2011) and Luo (2017) in their research found that the level of information asymmetry had no significant effect on the disclosure of carbon emissions. The inconsistent research results point to the need for further research on this topic. This research refers to research conducted by Luo (2017) which examined the Effect of Carbon Performance and Institutional context on voluntary carbon emission disclosure from 500 companies listed in the carbon disclosure project (CDP) in 2008-2015 (8 years). The variables used include carbon performance, firm size, profitability, leverage, capital expenditure, level of information asymmetry and institutional context. This research is a development of previous research. The development undertaken is to use the measurement model developed by Choi et al. (2013) related to the measurement of carbon emission disclosures. Another development is to adjust the independent variable to the Indonesian institutional context and environmental performance variables. 2. LITERATURE REVIEW 2.1. Legitimacy Theory Brown and Deegan (2012) revealed that companies will try to persistently convince people that they carry out activities in accordance with social norms and values that exist in society and applicable government regulations. Legitimacy is a process of gaining trust and recognition from the community for the survival of the company Ghozali and Chariri, 2014). When there are differences between the company and the community regarding the values adopted, then at that time the legitimacy of the company is at risk. Legitimacy theory is used to secure firm value from unexpected things, especially those related to differences in value views or the legitimation gap. One way to reduce the legitimation gap is by carrying out environmental disclosures (Meng et al., 2014; Monteiro and Guzman, 2010; Perera et al., 2019). This study uses legitimacy theory to prove that companies fulfill their social contracts to communities related to the environment by voluntarily disclosing carbon emissions. Disclosure of social and environmental activities has been regulated by regulatory authorities. One form of disclosure is regulated by IAI in paragraph 15 of PSAK Number 1 (revised 2012), namely: "Entities can also present, separate from financial reports, reports on the environment and reports on value added (value added statements), especially for industries where environmental factors play an important role and for industries that consider employees as a group of report users who play an important role. These additional reports are outside the scope of the Financial Accounting Standards." 2.2. Hypothesis Development Companies with superior carbon performance have an incentive to differentiate themselves from other companies that are performing poorly. Companies are encouraged to maintain and inform the public regarding the improvements made regarding their carbon profile by making specific carbon emission disclosures that are more objective and credible and difficult for other companies to imitate that have not implemented this strategy (Clarkson et al., 2008; Wang et al., 2013). The legitimacy theory explains the relationship between carbon performance and the extent of disclosure to be made as a form of corporate responsibility to the community. Companies with superior carbon performance have an incentive to inform investors and other stakeholders about their environmental strategy by making voluntary disclosures in order to gain legitimacy (Clarkson et al., 2008). Raida et al. (2014) stated that companies that have good environmental performance do not only disclose environmental policy strategies, but also other information related to the environment. This is in accordance with Luo's research (2017) which states that carbon performance has a significant effect on the disclosure of carbon emissions. From this description, the following hypothesis is formulated: H1: Carbon performance has a positive effect on carbon emission disclosure. The size of the company can reflect the resources it has (Barth and Kaznik, 1999; Belkoui, 2006; Choi et al., 2013 Eleftheriadis and Anagnostopoulou, 2015). Besides reflecting resources, company size also reflects the company's operational activities. The legitimacy theory states that a company is able to survive if the company is deemed to have carried out its business activities in accordance with the values held by the community (Yuliani, 2003; Samiaji, 2011; Tang and Luo, 2014). The bigger the size of the company, the more resources it has and the higher its operational activities, this causes the pressure to be received will be even greater. Companies are required to make objective and quality voluntary disclosures in order to gain legitimacy. H2: Company size has a positive effect on carbon emission disclosure. A good company's financial condition is able to finance the additional resources needed for carbon emission disclosure and is better able to withstand external pressures (Choi et al., 2013). Bewley and Li (2000) suggest that profitable companies are more likely to finance carbon emission prevention and reporting measures. The role of the legitimacy theory in the relationship between profitability and disclosure of carbon emissions is that when the company has a high profit, the company's responsibility will increase because the company is considered more capable of implementing policies related to reducing carbon emissions. High social pressure related to the environment makes companies need to make disclosures as a form of legitimacy. Luo (2017) research found that profitability is related to the disclosure of carbon emissions, companies realize that the benefits obtained are not only for the benefit of investors, but also the interests of the community' s environment. This is in accordance with the research of Yuliana et al. (2008), Clarkson et al. (2011) and Choi et al. (2013), which states that companies with a high level of profitability are more flexible in disclosing information and can act effectively in environmental pressures and quickly solve problems. From this description, the following hypothesis is formulated: H3: Profitability has a positive effect on carbon emission disclosure. Leverage relates to company finances (Kasmir, 2008; Nordiawan, 2006; Raharjaputra, 2009). Voluntary disclosure of carbon emissions adds extra costs to the company, thus preventing the company from fulfilling its obligations to creditors. Legitimacy theory plays a role in the relationship between leverage and disclosure of carbon emissions. Companies with low leverage are considered to be more capable of disclosing, this is because their lower obligations make the company have more power to disclose carbon emissions. High social pressure from the community can be met by the company because the company is not only focused on fulfilling its obligations to creditors. High leverage has an impact on at least disclosure because the company focuses on fulfilling its obligations rather than making disclosures (Roberts, 1992; Chen and Jaggi, 2000; Choi et al., 2013). Ghomi and Leung's research (2013) found that leverage has a negative effect on disclosure of carbon emissions because companies need to be more conservative in making policies, especially spending. Tang and Luo (2014) in their research also revealed that companies with a high degree of leverage are more careful in acting on expenditures, including prevention and reduction in carbon emissions. From this description, the following hypothesis is formulated: H4: Leverage has a negative effect on carbon emission disclosure. Clarkson et al. (2008) in their research revealed that companies with greater capital expenditures on innovation and newer equipment have a greater opportunity to make disclosures. This is because the company incurs additional costs to participate in climate change prevention campaigns and gain legitimacy from the community with evidence of reducing the resulting carbon emissions. The effect of the legitimacy theory in the relationship between capital expenditure and disclosure of carbon emissions is that if a company has high capital expenditure, social pressure from the community to request disclosure of financing related to its environmental activities increases, so disclosure needs to be done as a form of company legitimacy. Research by Villiers and Staden (2011) found that there is a positive influence between capital spending and disclosure of carbon emissions. Capital expenditures on fixed assets are considered capable of influencing disclosure because new equipment is considered to be more capable of managing emissions than old equipment so it needs to be disclosed. From this description, the

following hypothesis is formulated: H5: Capital expenditures have a positive effect on carbon emission disclosure. The high level of information asymmetry encourages stakeholders to request more disclosure from the company regarding the company's operational activities and environment (Verrecchia, 2001; Scott, 2009; Dhaliwal, 2011, Zhu and Zhang, 2012). The legitimacy theory states that if there is an imbalance of information received by stakeholders, it is necessary to have additional disclosures related to environmental activities that have been carried out by the company. Voluntary disclosure of carbon emissions is used to gain legitimacy from other external parties by expanding the information provided. H6: The level of information asymmetry has a negative effect on carbon emissions disclosure. Companies with high environmental performance have a positive relationship with environmental disclosure, especially climate change (Cho and Patten, 2007; Bebbington et al., 2008; Stanny, 2008; Dawkins and Fraas, 2011; Talenta, 2018). Companies with a proactive level of environment as evidenced by a PROPER rating have an incentive to make voluntary disclosure of carbon emissions to disclose the effectiveness of the environmental strategy used to investors and other external parties. Legitimacy theory has a role when a company gets a high ranking, so the community feels they need concrete evidence of the actions that have been taken by the company, whether their activities are in accordance with applicable norms and laws. Research by Pradini and Kiswara (2013) and Nugraha (2015) found that environmental performance has a positive and significant effect on disclosure of environmental emissions. H7: Environmental performance has a positive effect on carbon emissions disclosure. 3. METHODOLOGY 3.1. Variables Measurement Measurement of carbon emission disclosures is carried out using content analysis method. This method is done by examining annual reports and sustainability reports from companies that have been selected as the research sample. The extent of disclosure of carbon emissions in this study was analyzed by adopting the parameters from the study by Choi et al. (2013) referred to as the CDP (carbon disclosure project). The index developed by Choi et al. (2013) consists of five categories related to carbon emissions and climate change, namely: climate change (risks and opportunities), greenhouse gas emissions, energy consumption, reduction of greenhouse gases and costs, and accountability for carbon emissions. The area of carbon emission disclosure consists of 18 checklist items that need to be identified. Carbon performance is measured using carbon emission intensity, which is measured relatively more objectively in quantitative terms. The intensity of carbon emissions was chosen because the threat of climate change is focused on releasing carbon emissions into the atmosphere, so that the level of carbon emissions becomes the right and objective measure for carbon performance. This study measures carbon performance using CEI. A high carbon emission intensity value indicates that the company has poor performance because it uses its own resources, especially energy, inefficiently (Porter and van der Linde, 1995). Low carbon emission intensity indicates good performance. CEI is calculated using the natural logarithm of the ratio of total part 1 and part 2 greenhouse gas emissions to total company sales, which reflects the efficiency of the production process (Luo, 2017). Replicating Tang and Luo's research (2014) in Luo (2017), carbon emission intensity is used as a proxy for calculating carbon emission performance, calculated by carrying out a natural logarithm of total carbon emissions divided by the amount of production produced during 1 year. Firm size is measured by the logarithm of market capitalization. Profitability can be measured using return on assets (ROA). Leverage is measured by comparing total debt to total assets. Capital expenditure is measured by comparing capital expenditure with total sales revenue. In this study, TobinQ is used as a proxy to measure the level of company information asymmetry (Clarkson et al., 2008). TobinQ is measured as the company's total market value based on year-end prices and number of shares outstanding, plus preferred stock, as well as the book value of long-term debt and current liabilities divided by the book value of total assets. The company performance rating program (PROPER) is one of the methods used to assess environmental performance in relation to corporate governance and environmental management carried out by the State Ministry for the Environment. PROPER is classified into five categories, from best to worst, namely gold, green, blue, red and black (Kementerian Lingkungan Hidup, 2011; 2013). 3.2. Sample This study uses a population in the form of companies listed on the Indonesia Stock Exchange (BEI) in 2013-2017. In this study, the sample selection is based on the purposive sampling method, which is limited sampling by determining the criteria by the researcher (Sekaran, 2003). The reason for choosing the purposive sampling method is to meet the criteria of the sample that can be used on the research variables. The sample selection criteria include: 1. Companies listed on the IDX and publish annual reports (annual reports) and sustainability reports (sustainability report) in 2013-2017 2. Companies that disclose carbon emission data explicitly. The final sample used comes from four out of a total of eleven sectors. The four sectors are materials, consumer discretionary, energy and utilities. 3.3. Data Analysis and Hypothesis Testing Hypothesis testing in this study was carried out by panel data regression consisting of three models, namely the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). The three models are compared by testing the accuracy of the model, and the best model is selected to answer the hypothesis that has been made by the researcher. The regression equation model used is as follows: VCDi,t= α0+β1 lnCEIi, t-1+β2 SIZEi, t-1+β3 ROAi, t-1+β4 LEVi, t-1+β5 CAPSPENDi, t-1+β6 TOBINQi, t-1+β7 PROPERi, t-1+ e (1) Note: VCD: Voluntary carbon disclosure α: Constant β1 – β7: Regression coefficient lnCEI: Carbon emission intensity (carbon performance) SIZE: Company size ROA: Return on asset (profitability) LEV: Leverage CAPSPEND: Capital expenditures TOBINQ: Asymmetrical level of company information PROPER: Environmental performance i: i - Entity t: Period of time e: Error. 4. EMPIRICAL RESULTS 4.1. Descriptive Statistics There are 38 companies listed on the Indonesia Stock Exchange and published annual reports and sustainability reports in 2013, 43 companies in 2014, 48 companies in 2015, 49 companies in 2016, and 51 companies in 2017. Companies that meet the criteria are samples are as many as 9 companies. The research sample was observed for 5 years, from 2013 to 2017, thus there are 45 observations. From 45 observations, Table 1 shows that the disclosure of carbon emissions (VCD) has a minimum value of 0. 166, a median value of 0. 389 and a maximum value of 0.611. Simultaneously, the average value is 0.401, this indicates that the company on average discloses 40% or about 7 disclosure items of the 18 disclosure items in the carbon disclosure project (CDP) index. The disclosure made by the company is still low because the average company discloses less than 50% of the total items in the carbon disclosure project (CDP) index. The standard deviation of this variable simultaneously is 0.114. This variable simultaneously has a higher mean value than the standard deviation, this implies that the diversity of the research data sample is high and the spread (variation) of the data is low. Table 1 shows that the carbon emission intensity (lnCEI) as the independent variable in this study has a minimum value of -3.22, a median value of 2.49 and a maximum value of 8.73. The average value obtained was 2.7, with a standard deviation value of 3.63, where the average value was smaller than the standard deviation. This shows that the diversity of the sample data in the study is still low with high data variation. The environmental performance rating (PROPER) variable shows that most of the samples received a rating of 3 or a blue rank. Of the 45 samples studied, consisted of 3 companies with a gold rating, 10 companies with a green rating, 32 companies with a blue rating and none with a red or black rating. This shows that the management of the company used as a sample has made environmental responsibility efforts in accordance with the established regulations. Table 1: Descriptive statistics Variable Min Med Carbon emission 0.16 0.38 disclosure (VCD) Carbon emission -3.22 2.49 intensity (lnCEI) Company size (SIZE) 28.94 31.77 Profitability (ROA) -0.04 0.08 Leverage (LEV) 0.13 0.36 Capital expenditure 0.01 0.11 (CAPSPEND) Asymetry information 0.32 1.57 level (TOBINQ) Max Mean 0,611 0.40 8,73 2.70 33,44 31.35 0,29 0.09 0,69 0.37 0,785 0.13 3,85 1.70 Std. Dev. 0.11 3.63 1.22 0.07 0.15 0.12 0.94 4.2. Hypothesis Testing Results Panel data regression analysis is used to determine

the model to be used. There are three types of models that can be used, namely the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). The three models were compared by performing a model accuracy test. There are three types of tests, namely the chow test which is used to compare CEM and FEM, the Hausman test which is used to compare FEM and REM, and the Lagrange multiplier (LM) test which is used to compare CEM and REM (Ghozali, 2011; Ghozali and Ratmono, 2017. From the two tests that have been carried out, it can be concluded that the fixed effects model (FEM) is the best model. Therefore, there is no need to do a lagrange multiplier test. The test results with FEM regression are presented in Table 2: Carbon emission intensity has no significant effect on carbon emission disclosure. This is shown in Table 2 that lnCEI as a carbon emission intensity variable has a P = 0.8034 with a regression coefficient of –0.009322 on the disclosure of carbon emissions as the dependent variable. A p-value greater than 0.05 proves that this variable does not have a significant effect on disclosure of carbon emissions. The average carbon emission intensity of 943.26 does not have a significant effect on the company's carbon emission disclosure. Then hypothesis H1 related to carbon emission intensity and carbon emission disclosure is rejected. The companies used in this study consist of four sectors from a total of eleven existing sectors. The sectors that were disclosed were the materials sector, the consumer discretionary sector, the energy sector, and the utilities sector, in which the most participating companies came from the materials sector. The lack of participation of companies from each sector shows that regulators are less assertive in formulating policies and imposing sanctions on companies that do not disclose the intensity of carbon emissions they produce. Hoffman and Busch (2008) stated that policymakers can use the company's carbon emission intensity as a tool to evaluate current climate change-related policies and formulate policies in the future. Companies originating from the materials and energy sector tend to produce a higher carbon emission intensity than companies from the utilities and consumer discretionary sectors. This can be proven by the results of the average intensity of carbon emissions produced. The materials sector produces an average of 665.62 carbon emissions and the energy sector produces an average carbon emission of 2533.17, these results are very different from the carbon Table 2: Hypothesis testing results Variable Coefficient Std. Error Constant –0.4855 0.6708 lnCEI –0.0093 0.0371 SIZE 0.0628 0.0260 ROA –0.8987 0.3731 LEV –1.5282 0.4536 CAPSPEND 0.0743 0.3196 TOBINQ –0.0105 0.0300 PROPER –0.0290 0.0280 t-Statistic –0.7237 –0.2512 2.4178 –2.4088 –3.3685 2.3267 –0.3509 –1.0320 P-value 0.4750 0.8034 0.0221 0.0226 0.0021 0.0272 0.7282 0.3080 lnCEI: Carbon emission intensity (carbon performance), SIZE: Company size, ROA: Return on asset (profitability), LEV: Leverage, CAPSPEND: Capital expenditures, TOBINQ: Asymmetrical level of company information, PROPER: Environmental performance emissions produced by the utilities and consumer discretionary sectors, which on average produce 17 carbon emissions. 1 and 77, 83. The difference in the company's operational activities can affect the amount of carbon emission intensity produced. Companies engaged in the materials and energy sector tend to carry out heavier and less effective operational activities compared to the utilities and consumer discretionary sectors. The results of this study do not support the legitimacy theory that companies with higher levels of carbon emissions face a threat to their legitimacy status and therefore use carbon disclosure as a tool to gain legitimacy. This study is in line with Porter and van der Linde (1995), Freedman and Jaggi (2005, 2009, 2011), and Kim and Lyon (2011) who found that there was no significant relationship between carbon emissions and carbon disclosure. Company size has a significant positive effect on carbon emission disclosure. This is shown in Table 2 that SIZE as a company size variable has a P = 0.0221 with a regression coefficient of 0.062897 on the dependent variable of carbon emission disclosure. The P = 0.0221 proves that the firm size variable has a significant effect. The positive significant results support the H2 hypothesis. Market capitalization shows the value of a company. The size of the company in this study is measured using market capitalization which is converted by logarithms. The companies used as samples have a minimum market capitalization value of IDR 3,720,268,399,880, a median value of 63,225,790,555,200, and a maximum value of IDR 335,000,000,000,000. The average market capitalization value of the sample companies is IDR 76,374,278,276,947. In sample companies, the average company disclosed 40% of the items, this shows that the extent of disclosure is still relatively low. The positive significant results in the research indicate that the low area of disclosure made is influenced by the relatively small size of the company. The test results are in line in supporting the legitimacy theory which reveals that companies with a larger size and getting more attention than those with a small size need to make more efforts to disclose carbon information that has been generated to avoid gaps between the community and the company. This is because large companies tend to have higher resources and operational activities. Therefore, companies will act responsively and cooperatively to gain legitimacy and eliminate gaps by disclosing carbon emissions as a form of corporate responsibility. Profitability has no positive effect on disclosure of carbon emissions. Table 2 shows that the P-value of ROA as a proxy for the profitability variable is 0.0226 with a regression coefficient of -0.898789 for the dependent variable on carbon emission disclosure. The P = 0.0226 means that this variable is significant but has a negative direction to the disclosure of carbon emissions so that the hypothesis H3 is rejected. The results of the study are not consistent with the research conducted by Choi et al. (2013), Jannah (2014), Majid and Ghozali (2015) and Hermawan et al. (2018) who found that there was a significant positive relationship between profitability and disclosure of carbon emissions with ROA as a proxy. Bewley and Li (2000) state that companies with more profits will take more precautionary measures and report carbon emissions than companies with low profits. The difference in research results related to profitability is caused by the low number of samples and differences in the nature of the companies used as samples, the low participation of each sector used makes the sample less able to reflect the real situation. The results of the research test suggest that although the level of company profitability is high and it has the ability to make disclosures, this does not shake the decision to increase the extent of information on carbon emission disclosures. Companies in Indonesia still place high economic performance as their main goal. So that companies with a high level of profit tend to allocate resources to increase and expand their economic activities (Islam and Deegan, 2008). Leverage has a significant negative effect on carbon emission disclosure. Table 2 shows that LEV as the leverage independent variable has a P = 0.0021 with a regression coefficient value of –1.52827 on the disclosure of carbon emissions as the dependent variable. The P = 0.0021 indicates that leverage has a significant effect on the dependent variable. These results indicate that the hypothesis H4 is accepted. This study is in line with Ghomi and Leung (2013) which showed that leverage has a negative effect on disclosure of carbon emissions. This is because companies need to be more conservative in making policies, especially expenditures, so companies with high debt levels tend to disclose less carbon emissions, and vice versa. Capital spending has a positive effect on disclosure of carbon emissions. CAPSPEND as a proxy for the capital expenditure variable has a P = 0.0272 with a regression coefficient of 0.0743267 on the disclosure of carbon emissions as the dependent variable. The P = 0.0272 indicates that the capital expenditure variable is significant because it is less than 0.05. The results of this test indicate that the hypothesis H5 is accepted. The results of the research test are in accordance with Villiers and Staden (2011) who found that there is a positive and significant relationship between capital expenditure and disclosure of carbon emissions. Villiers and Staden (2011) reveal that companies with large capital expenditures are considered more capable of managing their emissions because they use newer equipment. The test results are also consistent with the findings of Clarkson et al. (2008) which shows that companies with large capital expenditures have a greater chance of making disclosure, this is because companies are deemed necessary to report the results of innovation and carbon efficiency related to the purchase of new equipment. The level of information asymmetry does not have a

significant effect on disclosure of carbon emissions. Table 2 shows that TOBINQ as a proxy for the independent variable, the level of information asymmetry, has a P = 0.7282 with a regression coefficient value of -0.010538 for the dependent variable on carbon emission disclosure. The P > 0.05, indicating that this variable does not have a significant effect. The insignificant result makes hypothesis H6 rejected. The results of this study are not in line with Healy and Palepu (2001), Martínez-Ferrero et al. (2011), Suijs and Hollander (2013) who found that there was a significant negative relationship between the level of information asymmetry and disclosure of carbon emissions. The legitimacy theory is not supported by the test results of this study. This is due to the low number of samples used in the study. Environmental performance has no effect on disclosure of carbon emissions. Table 2 shows that PROPER as a proxy for the independent variable of environmental performance has a P = 0.308 with a regression coefficient of –0.029 on the dependent variable for disclosing carbon emissions. The P = 0.308 indicates that this variable does not have a significant effect so that the hypothesis H7 is rejected. A high PROPER rating indicates that the company has a good environmental performance, and vice versa. Based on the data, it is known that most of the PROPER ratings of companies are 3 or blue rank. This shows that the average company has attempted to make disclosures in accordance with applicable regulations. The results of this study contradict Pradini and Kiswara (2013) and Nugraha (2015) who found that the environmental ranking of PROPER has a significant positive effect on environmental emission disclosure. A company with a high rating expands the scope of environmental information it will disclose. This study was not accepted because the sample size was too low. From 45 observations made, 32 companies received a blue rating, 10 companies received a green rating and 3 companies received a gold rating. The absence of a company with a black and red rating could affect the results of the study because of the less varied ratings. 5. CONCLUSION The intensity of carbon emissions has no effect on disclosure of carbon emissions. High or low intensity of carbon emissions produced does not affect the extent of disclosure of carbon emissions to companies in Indonesia. The size of the company affects the disclosure of carbon emissions. The larger the size of a company, the more extensive the disclosure of carbon emissions will be made. Profitability has a negative effect on the extent of disclosure of carbon emissions. The lower the profitability of a company, the more extensive the disclosure of carbon emissions is made. The lower the leverage of a company, the more extensive the disclosure of carbon emissions will be. The results also show that the higher the capital expenditure issued by the company, the more extensive the disclosure of carbon emissions is made. The size of the level of information asymmetry does not affect the extent of disclosure of carbon emissions to companies in Indonesia. Environmental performance has no effect on disclosure of carbon emissions. Limitations of the study include the coefficient of determination test results showing that the variable carbon emission disclosure is only explained by 45.74% according to the adjusted R square results. This shows that there are other variables outside the research model that affect the disclosure of carbon emissions. From the conclusions and limitations that have been stated, the researcher provides suggestions for future research, if the data is available, so that the number of samples of companies studied is increased and more varied in its sector to get more accurate results. Future research would be better if adding other variables that could influence the company's broad practice of disclosing carbon emissions. REFERENCES Al-Tuwaijri, S.A., Christensen, T.E., Ii, K.E.H. (2004), The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. Accounting, Organizations and Society, 29, 447-471. Barth, M., Kasznik, R. (1999), Share repurchases and intangible assets. Journal of Accounting and Economics, 28, 211-241. Bebbington, J., Larrinaga, C., Moneva, J.M., Bebbington, J. (2008), Corporate social reporting and reputation risk management. Accounting, Auditing and Accountability Journal, 21(3), 337-361. Belkaoui, A.R. (2006), Accounting Theory: Teori Akuntansi. 5th ed. Jakarta: Salemba Empat. Bewley, K., Li, Y. (2000), Disclosure of environmental information by Canadian manufacturing companies: A voluntary disclosure perspective. Advances in Environmental Accounting and Management, 1, 201-226. Brown, N., Deegan, C. (2012), The public disclosure of environmental performance information-a dual test of media agenda setting theory and legitimacy theory. Accounting and Business Research, 29, 37-41. Cahya, B.T. (2017), Relevansi carbon emission disclosure dan karakteristik perusahaan pada perusahaan yang terdaftar di Jakarta Islamic Index. Jurnal Ekonomi and Keuangan Islam, 3(2), 73-80. CDP. (2013), Investment, Transformation and Leadership: CDP S&P 500 Climate Change Report 2013. Chen, C.J.P., Jaggi, B. (2000), Association between independent non- executive directors, family control and financial disclosures in Hong Kong. Journal of Accounting and Public Policy, 19, 285-310. Cho, C.H., Patten, D.M. (2007), The role of environmental disclosures as tools of legitimacy: A research note. Accounting Organizations and Society, 32(7-8), 639-647. Choi, B.B., Lee, D., Psaros, J. (2013), An analysis of Australian company carbon emission disclosures. Pacific Accounting Review, 25(1), 58-79. Clarkson, P.M., Li, Y., Richardson, G.D., Vasvari, F.P. (2008), Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. Accounting Organizations and Society, 33, 303-327. Clarkson, P.M., Overell, M.B., Chapple, L. (2011), Environmental reporting and its relation to corporate environmental performance. Abacus, 47(1), 27-60. Dawkins, C., Fraas, J.W. (2011), Coming clean : The impact of environmental performance and visibility on corporate climate change disclosure. Journal of Business Ethics, 100, 303-304. Dhaliwal, D.S., Li, O.Z., Tsang, A., Yang, Y.G. (2011), Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. Accounting Review, 86(1), 59-100. Eleftheriadis, I.M., Anagnostopoulou, E.G. (2015), Relationship between corporate climate change disclosures and firm factors. Business Strategy and the Environment, 24(8), 780-789. Elkington, J. (2001), Enter the Triple Bottom Line. p1-16. Freedman, M., Jaggi, B. (2005), Global warming, commitment to the Kyoto protocol, and accounting disclosures by the largest global public firms from polluting industries. International Journal of Accounting, 40(3), 215-232. Freedman, M., Jaggi, B. (2009), Global warming and corporate disclosures: A comparative analysis of companies from the European Union, Japan and Canada. Sustainability Environmental Performance and Disclosures, 4, 129-160. Freedman, M., Jaggi, B. (2011), Global warming disclosures: Impact of Kyoto protocol across countries. Journal of International Financial Management and Accounting, 22(1), 46-90. Ghomi, Z.B., Leung, P. (2013), An empirical analysis of the determinants of greenhouse gas voluntary disclosure in Australia. Accounting and Finance Research, 2(1), 110-127. Ghozali, I. (2011), Aplikasi Analisis Multivariate dengan Program IBM SPSS 19. 5th ed. Semarang: Badan Penerbit Universitas Diponegoro. Ghozali, I., Chariri, A. (2014), Teori Akuntansi: International Financial Reporting System (IFRS). 4th ed. Indonesia: Badan Penerbit Universitas Diponegoro. Ghozali, I., Ratmono, D. (2017), Analisis Multivariat dan Ekonometrika: Teori, Konsep, dan Aplikasi Dengan Eviews 10. 2nd ed. Semarang: Badan Penerbit Universitas Diponegoro. Government of Indonesia. (2011), Peraturan Presiden Republik Indonesia Nomor 61 Tahun 2011, Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca. p1-16. Healy, P.M., Palepu, K.G. (2001), Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. Journal of Accounting and Economics, 31, 405-440. Hermawan, A., Aisyah, I.S., Gunardi, A., Putri, W.Y. (2018), Going green: Determinants of carbon emission disclosure in manufacturing companies in Indonesia. International Journal of Energy Economics and Policy, 8(1), 55-61. Hoffman, V.H., Busch, T. (2008), Corporate carbon performance indicators. Journal of Industrial Ecology, 12(4), 505-520. Indonesia Student Association. (2011), Sustainable Future for Human Security The Second International Conference on Sustainable Future for Human Security. Indonesia: Indonesia Student Association. IPCC. (2013), Climate Change 2013: The Physical Science Basis. Irwhantoko, I., Basuki, B. (2016), Carbon emission disclosure: Studi pada perusahaan manufaktur Indonesia. Jurnal Akuntansi dan Keuangan, 18(2), 92-104.

Islam, A.M., Deegan, C. (2008), Motivations for an organisation within a developing country to report social responsibility information: Evidence from Bangladesh. Accounting Auditing and Accountability Journal, 21(6), 850-874. Jannah, R. (2014), Analisi Faktor-Faktor Yang Mempengaruhi Carbon Emission Disclosure Pada Perusahaan di Indonesia (Studi Empiris Pada Perusahaan Yang Terdaftar di Bursa Efek Indonesia Periode 2010-2012). Kasmir. (2008), Analisis Laporan Keuangan. Jakarta: PT Raja Grafindo Persada. Kementerian Lingkungan Hidup. (2011), PROPER, Diambil Dari. Available from: http://www.menlh.go.id/proper. Kementerian Lingkungan Hidup. (2013), Peraturan Menteri Lingkungan Hidup Republik Indonesia No. 06 Tahun 2013-Program Penilaian Peringkat Kerja Perusahaan Dalam Pengelolaan Lingkungan Hidup. Khoiriyah, I. (2017), Pengaruh Media Exposure, Tipe Industri, Profitabilitas, Leverage, dan Ukuran Perusahaan Terhadap Carbon Emission Disclosure. Indonesia: Universitas Muhammadiyah Malang. Kim, E.H., Lyon, T.P. (2011), Strategic environmental disclosure: Evidence from the DOE's voluntary greenhouse gas registry. Journal of Environmental Economics and Management, 61(3), 311-326. Luo, L. (2017), The influence of institutional contexts on the relationship between voluntary carbon disclosure and carbon emission performance. Accounting and Finance, 59(2), 1235-1264. Majid, R.A., Ghozali, I. (2015), Analisis faktor-faktor yang mempengaruhi pengungkapan emisi gas rumah kaca perusahaan di indonesia, 4, 1-11. Marsh and McLennan Companies. (2018), Reporting Climate Resilience: The Challenges Ahead, Diambil Dari. Available from: https://www. oliverwyman.com/content/dam/mmc-web/global-risk-center/files/ reporting-climate-resilience.pdf. Martínez-Ferrero, J., Ruiz-Cano, D., García-Sánchez, I.M. (2011), The causal link between sustainable disclosure and information asymmetry: The moderating role of the stakeholder protection context. Corporate Social Responsibility and Environmental Management, 23(5), 319-332. Meng, X.H., Zeng, S.X., Shi, J.J., Qi, G.Y., Zhang, Z.B. (2014), The relationship between corporate environmental performance and environmental disclosure: An empirical study in China. Journal of environmental management, 145, 357-367. Monteiro, S.M., Guzmán, B.A. (2010), Determinants of environmental disclosure in the annual reports of large companies operating in portugal. In: Corporate Social Responsibility and Environmental Management. Chichester: Wiley. p185-204. Nordiawan, D. (2006), Akuntansi Sektor Publik. Jakarta: Salemba Empat. Nugraha, D.E.B. (2015), Profitabilitas, Leverage, dan Kinerja Lingkungan Terhadap Environmental Disclosure. Perera, L., Jubb, C., Gopalan, S. (2019), A comparison of voluntary and mandated climate change-related disclosure. Journal of Contemporary Accounting and Economics, 15, 243-266. Porter, M.E., van der Linde, C. (1995), Green and Competitive: Ending the Stalemate. Boston: Harvard Business Review. p120-134. Pradini, H.S., Kiswara, E. (2013), The analysis of information content towards greenhouse gas emissions disclosure in Indonesia's companies. Diponegoro Journal of Accounting, 2(2), 1-12. Raharjaputra, H.S. (2009), Manajemen Keuangan dan Akuntansi Untuk Eksekutif Perusahaan. Jakarta: PT Raja Grafindo Persada. Raida, N., Rahman, A., Zaleha, S., Rasid, A., Basiruddin, R. (2014), Exploring the relationship between carbon performance, carbon reporting and firm performance: A conceptual paper. Procedia-Social and Behavioral Sciences, 164, 118-125. Robert, C. (1992), In: Owen, D., editor. Environmental Disclosure in Corporate Annual Reports in Western Europe. London: Chapman and Hall. Samiaji, T. (2011), Gas Co2 di wilayah Indonesia. Berita dirgantara, 12(2), 68-75. Scott, W.R. (2009), Financial Accounting Theory. 5th ed. United States: Prentice Hall. Sekaran, U. (2003), Research Methods for Business: A Skill Building Approach. New York: John Wiley & Sons. Stanny, E., Ely, K. (2008), Corporate environmental disclosures about the effects of climate change. Corporate Social Responsibility and Environmental Management, 15(6), 338-348. Suijs, J.P., Hollander, S. (2013), Voluntary Disclosure and Information Asymmetry in the Netherlands Voluntary Disclosure and Information Asymmetry in the Netherlands Master Thesis Department Accounting University of Tilburg. Netherlands: University of Tilburg. Talenta, D. (2018), Analisis Faktor-Faktor Spesifik Pengungkapan Informasi Karbon. Tang, Q., Luo, L. (2014), Carbon management systems and carbon mitigation. Australian Accounting Review, 24(1), 84-98. The Intergovermental Panel on Climate Change. (2007), Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovermental Panel on Climate Change. United Nations. (1998), Kyoto protocol to the united nations framework kyoto protocol to the United Nations framework. Review of European Community and International Environmental Law, 7, 214-217. Verrecchia, R. E. (2001). Essays on disclosure. Journal of Accounting and Economics, 2001, 32 (1-3), 97-180 Villiers, C., Staden, C.J. (2011), Where firms choose to disclose voluntary environmental information. Journal of Accounting and Public Policy, 30(6), 504-525. Wang, J., Song, L., Yao, S. (2013), The determinants of corporate social responsibility disclosure: Evidence from China. The Journal of Applied Business Research, 29(6), 1833-1848. Yuliana, R., Purnomosidhi, B., Sukoharsono, E.G. (2008), Pengaruh karakteristik perusahaan terhadap pengungkapan corporate social responsibility (CSR) dan dampaknya terhadap reaksi investor. Jurnal Akuntansi dan Keuangan Indonesia, 5(2), 245-276. Yuliani, R. (2003), Pengaruh Karakteristik Perusahaan Terhadap Praktek Pengungkapan Sosial dan Lingkungan di Indonesia. Semarang: Universitas Diponegoro. Zhu, X., Zhang, C. (2012), Reducing information asymmetry in the power industry : Mandatory and voluntary information disclosure regulations of sulfur dioxide emission. Energy Policy, 45, 704-713. Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia Ratmono,et al.: Effect of Carbon Performance, Company Characteristics and Environmental Performance on Carbon Emission Disclosure: Evidence from Indonesia