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Green Earth: Carbon Emissions, ISO 14001, Governance Structures, Militarily Connected from the Manufacturing Industries in Indonesia

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Abstract:

Research aims: This study aims to examine the effect of ISO 14001 empirically, Governance Structures and companies led by back with a military to carbon emissions disclosure in the manufacturing company that registered at the (IDX) Indonesian Stock Exchange of 2013 to 2017.

Design/Methodology/Approach: The sample in this research was 53 companies chosen based on purposive sampling technique. The data used was 265 observation. The testing of hypotheses uses Ordinary Least Square (OLS) regression with STATA v14.

Research findings: The research results show that there are three variables have proven to be not significant to carbon emissions, namely board independent, military connection, and return of equity. Research proves that board independent, military relationship, and return of equity did not affect commitment to express carbon emissions. On the other hand, this research demonstrates that there is four a variable that has significant impact on the carbon emission disclosure in manufacturing company that is, board size, ISO 14001, firms size and leverage.

Theoretical contribution/ Originality: This research explain that the average Carbon Emission Disclosure (CED) performance of companies that have military-connected is higher than companies that not military-connected. Companies that have an ISO 14001 certificate with military connections have a higher average and are significantly higher than companies that are not connected with the military.

Practitioner/Policy implication: The results of this study indicate the importance for companies to pay attention to the environment of production activities and the need for the government to set standards for disclosure of carbon emissions in order to achieve clean.

Research limitation/Implication: The research carried out is still limited to companies that publish carbon emissions disclosures, inconsistent and still relatively low because disclosure of carbon emissions is still voluntary.

Keywords: Board Size; Board of Independent; ISO 14001; Military Connection; Firms Size; Leverage; Return on Equity; Carbon Emission

Introduction

A climate change problem and concerns public over issues caused by climate change led to the appearance of the new environment in recent years and made serious risks for humankind requires global response

urged to avoid the impact of disasters (Dietz, Hope, Stern, & Zenghelis, 2007). These changes focus on reducing greenhouse gases around the world, including Indonesia. An example of commitment formed in Indonesia is presidential regulation No. 61 years 2011 and presidential regulation No. 71 years 2011 in which those regulations were made to mitigate the climate change in controlling and reducing the risk of climate change. As in return, those ways can lower emissions or increase greenhouse gas (GHG) from various sources of emissions. The regulation to intrust company with greenhouse gas, energy consumption, or production of national action plan on cutting greenhouse gases and organizing nationwide greenhouse gas inventory. This research stems from the idea that carbon management plays a vital role in the transition to a low carbon future. Carbon management strategies as a secure disclosure of information enable carbon companies, identify sources of emission measurements, inventory emissions, and then explore alternative options for cutting emission levels (Wahyuni & Ratnatunga, 2015).

In 1993, the European Union published an environment for management and audit scheme manage for organization that build the Environment of Management System (EMS) certain in accordance with the directive and in 1996. The International Standardization Organization (ISO) sets up its own voluntary environmental standard for EMS ISO 14001 certification (Montiel & Husted, 2009). The survey found that factories that instituted ISO 14001 type internal management procedures demonstrated superior environmental performance (Dasgupta, Hettige, & Wheeler, 2000). There is a commitment formed by the Indonesian government to reduce carbon gas emissions, the targets listed in Nationally Determined Contribution (NDC) a decrease in emissions by 29% in 2030, 834 with as much as million tons of CO₂ for all sectors and in the energy sector has received 314 million tons by CO₂ emissions.

Energy is a fuel for global economic activities, such as population expansion, improvement in quality of life standards, and consumption growth. It is estimated that the increase in power demand of 21 % in 2030 (IEA, 2015). At the same time, the focus on climate change continues to grow, governments around the world have agreed to reduce CO₂ emissions and other environmental impacts. The Ministry of Energy and Mineral Resources (2017) released emissions produced by the energy producer industry category in 2016, producing 247, 422 Gg CO₂e carbon emissions from three subcategories, namely power plants, oil refineries, and coal processing. Among the three subcategories, the most significant contributor to emissions was power generation by 93.74%, followed by oil refineries and coal processing. Emissions in this category have increased by an average of 7.73% per year. The increase in emissions that occurred is directly proportional to the rise in fuel consumption, which is an average of 7.51% per year. GHG emissions generated by the energy producer industry category from year to year can be seen in Figure 1.

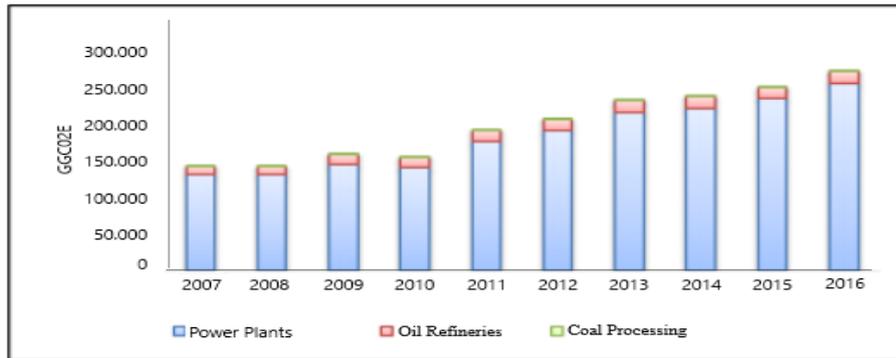


Figure 1 GHG emissions in the Energy Producing Industry Category.

Source: Ministry of Energy and Mineral Resources (2017) - www.esdm.go.id

Research on the disclosure of carbon emissions have been developed in developed countries such as the in Istanbul Kilic and Kuzey (2019), in Canada Ben-amar, Chang, and McIlkenny (2017), and in Australia Rankin, Windsor, and Wahyuni (2011); Bae Choi, Lee, and Psaros (2013); Yunus, Eljido-Ten, and Abhayawansa (2016). This research evolves over an increase in the world's attention regarding the real climate change, one of them is the same time as the impact of the company business. Kilic and Kuzey (2019) found that members of the board independent, members of foreign diversity, sustainability committee, firm's size, and type industry affect on carbon emissions disclosure. Ben-Amar et al., (2017) the research sample at a Canadian company shows that gender diversity, independent board members, company size and carbon emission levels influence companies to disclose carbon emissions. Rankin et al., (2011) found that environmental management systems, ecological committees, firm's size, and type industry have an essential role in the disclosure of carbon emissions. In research conducted in Indonesia Hermawan, Aisyah, Gunardi, and Putri (2018) found that regulators, firm's size, and profitability have an influence in disclosure of carbon emissions in Indonesia. Nasih, Harymawan, Paramitasari, and Handayani (2019) state that board size structure, board independent, and firm's size have an impact on the disclosure of carbon emissions in mining and plantation companies in Indonesia. Departing from research conducted by several previous researchers, there are at least the limitations of the selection of the use of variable indexes, which still tend to be subjective, and is highlighted the large-scale sample coverage that generalizes companies without looking at problem support. This research then wants to answer the limitations by using a variable index which is the basis and assessment set by GRI for companies supporting the production of Emission Gas. Freshness in this research is the selection of the index variable, military connections and relationships which represents examples of company specifications that support the urgency of gas emissions production in Indonesia.

In 1957, the Indonesian government issued a regulation which support and strengthen the involvement of military personnel in economic activity in Indonesia and since, the military business has emerged as one of the players is important in the Indonesian economy (Harymawan, 2018). According to Duffy (2006), CEOs with a military

background have more comprehensive leadership skills such as team work; good communication skills; organizational skills; set specific goals and empower others to achieve them such as a highly developed sense of ethics; and the ability to handle pressure that can enhance overall company performance. In organizational behavior that has a military background to a company policy, it can instill a stronger sense of ethics (Benmelech & Frydman, 2015). By having the same character, members of the military-connected council are considered capable of making decisions correctly because they tend to be more obedient to the rules and can also make decisions under crisis as if the entity is under pressure from various aspects for example in social and environmental issues.

The purpose of this study is to analyze the relationship between disclosure of carbon emissions from manufacturing companies involved as supporters of gas emissions production and listed on the Indonesia Stock Exchange. Therefore, it is hoped that the findings of this study contribute to the subject of knowledge and provide evidence for further research on corporate governance in response to disclosure of carbon emissions. Therefore, the results of previous studies still show inconsistencies in the role of corporate governance for disclosure of carbon emissions.

This study contributes information sources about environmental disclosure practices that are expected to pay attention to their carbon emissions, then the results of this disclosure can contribute to considering aspects of the company's environmental performance.

Literature Review and Hypotheses Development

Reducing carbon emissions plans also requires individual support or commitment to company management who uphold decisions and entrepreneurs about reducing carbon emissions Iswati (2018) states that awareness of the need for commitment to reduce carbon to save the world starts from the Kyoto protocol and the poor, especially shown by reports on the sustainability of the poor, especially on economic, environmental and social conditions.

An important aspect of climate change mitigation is the obligation of companies to recognize, measure, record, present, and disclose carbon emissions (Kalu, Buang, & Aligha, 2016). A study by Kalu et al., (2016) suggested that carbon disclosure measures as a means to entrust and legitimize the public.

Reasons for disclosing carbon emissions that are recognized by the public is the awareness that leads the emission to make an environmentally friendly policy (Bae Choi et al., 2013). To discuss further, this research specifically refers to two main theories namely stakeholder theory and legitimacy theory. This is because the variables used are related to the theory we use and are explained in each of our hypotheses. Two theories show that they can meet the needs of stakeholders in corporate responsibility for their environment and stakeholders can know whether the responsibilities and programs

carried out by the company are in accordance with the values and goals expected by the community.

Mitchell and Wood (1977) classify Stakeholder definitions into two parts, stakeholders in a broad sense are some individuals or groups that can affect the achievement of organizational goals or are influenced by the result of organizational goals. The narrow definitions are stakeholders as groups on which the organization depends on continuity in his life. According to Freeman and Reed (1986), the classic definition of a stakeholder in an organization is any group or individual that can influence or be influenced by the achievement of organizational goals. To respond to pressure from stakeholder groups, companies tend to engage in environmentally responsible practices and disclose them through communication channels. Stakeholder theory takes the perspective that the company is not an entity that is only efficacious for its own interests, the company must also provide benefits to its stakeholders (Nasih et al., 2019). The company would find different ways that can seek gratification for stakeholders when contributing to economic resources companies is important because the survival of companies engaged in depend on our stakeholders. Disclosure of carbon emissions is a form of communication between the company and its stakeholders for providing support. With disclosure, companies try to show their social responsibility to all stakeholders.

The disclosure of the emission of carbon is form of communication between the company and its stakeholders for the provision of support. By this disclosure, the company tries to show of their social responsibility for all stakeholders. Stakeholders understand that companies in the field must be strong, heuristics intended to broaden the management's vision of the role and responsibilities of the optimization function are incoming profits and non-stock ownership interest claims. Pressure from stakeholders' forces management to disclose more information and therefore, stakeholders play an important role in the disclosure of social and environmental companies. Responding to pressure from stakeholders, the company may engage in environmentally responsible practices and express it through communication channels (Kilic & Kuzey, 2019). It is expected that governance structures such as board size, independent director, and director with a military background can meet the criteria expected by stakeholders as a form of corporate responsibility to meet the needs of stakeholders.

The theory of legitimacy for organization is the norm and social value by the group of people who want to assure that they concern the environment and this theory can explain the motivation behind the disclosure by an organization (Nasih et al., 2019). The disclosure of the environment part of corporate social responsibility to obtain the legitimacy of the social community groups a spot of company established and an effort to maximize financial assets the company in the long term.

Legitimacy theory considers the interactions between organizations and society in general; this theory can be associated with the concept of "social contract" (Bae Choi et al., 2013). As stated by Mathews (1995) that social contracts exist between organizations and individual members of the society if the society offers organizations with the right and legal authority to access "resources", such as natural or human

resources. Because these resources are essential for their survival since organizations must keep striving to meet community expectations (consistent with social contracts) to ensure their operations remain legal. Practices the responsibility of the company involved is the good intention and the environment and performance firms in mitigating the carbon emission that causes climatic changes and to increase the image of companies due to follow actively involved in practice responsibility. The types of the risk of not being can directly trigger a response legitimacy because they change the perception the parties to social contract, which must be preserved by the company. In the context of legitimacy, the company admits practices environmental sustainability into the company strategy as a consequence of the increasing demand for responsive environment (Yunus et al., 2016). It is expected that companies with ISO 14001 certificates have good environmental management so that they can manage and control the carbon emissions discharged from company activities.

Considering group dynamics, smaller boards are often expected to be more effective in monitoring and controlling management than larger boards (Jizi, Salama, Dixon, & Stratling, 2014). Because of their limited size, they are expected to benefit from more efficient communication and coordination, as well as a higher level of commitment and accountability from each board member. In general, there is more board monitoring capacity in a company. Rankin et al., (2011) report that companies with strong governance structures are more proactive in carbon disclosure. Directors are able to manage environmental issues better, because they will have a broader perspective on the long-term benefits that can be obtained from transparent environmental disclosure. However, a research conducted by Kilic and Kuzey (2019); Ben-amar et al., (2017) that size of the company's board structure has a negative influence on voluntary disclosure.

Very little research focuses on board size structure by the disclosure carbon emissions. In research Yunus et al., (2016); Liao, Luo, Tang, (2014) found that a positive and significant relationship between company structure size and disclosure of carbon emissions. A larger number of councils are more likely to allocate critical financial resources to pursue more environmental initiatives (Nasih et al., 2019) and various pressures by stakeholders who demand to demonstrate environmental responsibility to stakeholders, following Stakeholder Theory.

H₁: Board Size affects the disclosure of carbon emissions.

Simultaneously, previous studies that broad made a positive relationship between independence of the council and the level of disclosure environment, due to board independent at the company board, can reduce conflict and monitoring agency produce better, which leads to better management. In accordance with article 74 paragraph 1 of Law No. 40 of 2007 concerning Limited Liability Companies, namely company organs that carry out activities funded and discuss the obligations of natural resources, social responsibility, and the environment to improve the quality of life that benefits the company itself, the local community, and the community. The advantage of having an independent board in a company is that they can increase the company's timeframe and

show a more effective increase in corporate governance practices and have a positive influence on voluntary disclosure (Nasih et al., 2019).

Research conducted by Eng and Mak (2003) found that voluntary disclosure with the proportion of independent board members was negatively related to companies listed on the Singapore Stock Exchange (SES). Nasih et al., (2019) concluded that a high percentage of independent board bodies can reduce disclosure of carbon emissions. Companies that have an independent board tend to divert resources towards implementing carbon management systems for company operations to practice and show that their activities are in line with community expectations. (Yunus et al., 2016) assumed that the board independent positively related to the sustainability of reporting and trigger to associated entities by the disclosure of voluntary and is expected to not time on target the performance of the short run but in the long term with sustain an annual level of high transparency reporting the sustainability of companies, following the stakeholder's theory.

H_{2a}: Independent commissioner influenced on the disclosure of carbon emission.

H_{2b}: Independent director influenced on the disclosure of carbon emission.

The implementation of the management of the environment for a company showed that corporate commitment to monitor, manage, control, measure, and report their performance, including greenhouse gas emissions to be firm (Rankin et al., 2011). The environmental management system good demonstrated through certificate ISO 14001 because any information to establish communication detailed on the aspect of the development of environmental management. Environmental management system is following the ISO 14001 default management system about the environment. Environmentally friendly policy is the most influential policy for the company for implementing the system certified ISO 14001 management of the environment (Pratifri & Zulaikha, 2016). The environmental management system tended to be in a position to voluntarily disclose data and emission, they tend to provide information greenhouse gases more credible than companies without the EMS (Rankin et al., 2011).

In addition to applying an environmental-friendly management system, the company can find external certification ems them through ISO 14001 to indicate quality management system them and prepared the environment-friendly to their customers (Adams, 2002). The provision of various practices instituted to reduce pollution, as certificates of iso 14001, represent the use of management on the directive of the non-government to show it to the proactive community, an approach to climate change according to theory legitimacy. Implementation and support the 14001 certificate is to integrate environmental management system, health and safety, and in some cases, environmental management system (Morrow & Rondinelli, 2002).

H₃: A company that certified iso 14001 influenced on the disclosure of carbon emission.

Harymawan (2018) states that building political or military connections (one or both) can help developing country companies gain access to funding. In other words, such a relationship is a substitute for the quality of governance required by companies to make voluntary disclosures such as carbon emissions. Company management from former military members highly value values such as honesty, integrity and doing things in an ethical manner (Duffy, 2006). On voluntary disclosures such as carbon emissions that do not yet have guidelines such as GRI, to conduct and find out information about emissions released by the business activity process requires large funds to make a report.

Companies led by military councils have excellent backgrounds, performance skills in effective communication with subordinates and team members and define attachment to goals (Duffy, 2006). Associated with military experience ethical behavior can be a positive impact of social responsibility undertaken by councils that are motivated by altruistic military motivations, so as to provide reports with financial information that are more transparent and reliable for stakeholders. In this research it is hoped that ethical feelings, altruistic motivations and insensitivity to nature are stronger than military members, for example, can be seen in the occurrence of every major disaster in Indonesia. The people involved for the first time living and responding quickly and helping several natural disasters were the Indonesian national army, this shows that the closeness of the military to nature is enormous and has a positive impact related to the welfare of the community.

H₄: The company which has military connection influenced on the disclosure of carbon emission.

Based description of some research before, so this research is research model as in a Figure 2.

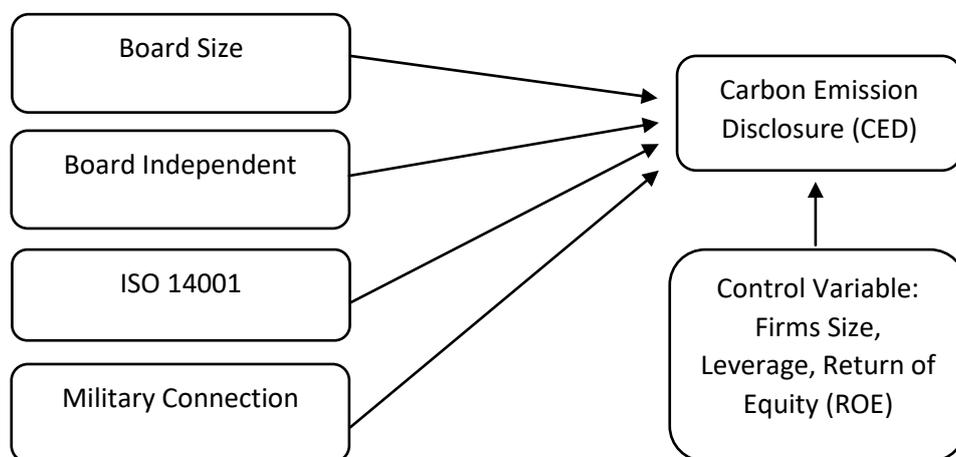


Figure 2 Research Model

Research Method

The population of this study is manufacturing companies listed on the Indonesia Stock Exchange (IDX) in the period 2013 to 2017. The sample in this research was 53 companies. The number of observations is 265 companies. Hence, in that years, Indonesia is the largest contributor to the 12th position of the entire country which produces CO₂ emissions from liquid fuel consumption of 233,504 thousand tons and will increase with the current technological advances (World Bank, 2014). This research uses the Ordinary Least Square regression model processed with STATA 14. The sampling method was purposive sampling. Sample criteria: (1) Publish annual reports and sustainability reports consistently in the period 2013 to 2017. (2) Companies that consistently disclose carbon emissions in the period 2013 to 2017.

Three types of variables were used in the study, namely the independent variable, dependent variable and control variable. The independent variable in this study is ISO 14001, Military Connections and Governance Structures which are presented in two sub-variables, namely: Board Size and Board Independent. They will be measured through these methods:

Board size measured by the number of the whole the total members of the company board adopted from research (Kilic & Kuzey, 2019; Nasih et al., 2019; Yunus et al., 2016). Board independent in this data collection referred to in the percentage of independent directors (INDDIR) of the total number of a director at both employers and the percentage of independent commissioner (INDCOM) of the total of commissioners in a corporation. Such measurement adopted from research Nasih et al., (2019). ISO 14001 is measured using dummy, 1 for companies that have an Environmental Management System with an ISO 14001 certificate, and 0 otherwise, adopted from research (Prafitri & Zulaikha, 2016; Rankin et al., 2011). Military Connection (Mcon) measured by dummy, 1 if there is a company management or company board member in the company structure with a military education background (Military Academy), and 0 otherwise. The measurement adopted from research (Benmelech & Frydman, 2015; Harymawan, 2018).

The dependent variable for the carbon emission is measured by the disclosure of the carbon emission proxy. The measurement of the disclosure of the emission of carbon was used in the research covered an item that adopted from research Bae Choi et al., (2013) and developed a checklist based on Carbon Disclosure Project information which is translated into 18 carbon index items.

The control variable in this research is that firm's size is measured using the log natural of the total assets of the company at the end of the fiscal year. Leverage is measured by the ratio of total debt to total assets at the end of the fiscal year. Return of Equity (ROE) is the company's ability to generate a return on equity. The formula for calculating ROE is net income to total equity. This study using variable control of firm's size, leverage, and ROE serves to balance also controlled independent variable out of research model. Previous studies have shown firm's size, leverage and ROE have a consistent influence on voluntary disclosure.

The research model used is Ordinary Least Square (OLS) regression analysis as follows:

$$CED = \alpha + \beta_1 \text{Board_Size} + \beta_2 \text{INDCOM} + \beta_3 \text{INDDIR} + \beta_4 \text{ISO 14001} + \beta_5 \text{Mcon} + \beta_6 \text{Firms_Size} + \beta_7 \text{Lev} + \beta_8 \text{ROE} + \epsilon$$

Note: Carbon Emission Disclosure (CED), Independent Commissioner (INDCOM), Independent Director (INDDIR), Environmental Management System (EMS), Military Connection (Mcon), Return on Equity (ROE), Leverage (Lev). The data analysis technique is OLS regression. Tests carried out with STATA 14 with a significance level of 1%, 5% and 10%.

Result and Discussion

Based on Table 1 shows that the total sample in this research was 265 observations, this research showed that a maximum score a member of the council in the structure of a corporation of 24 people and value minimum of 4 people with the average score 11.166. The percentage of independent commissioner (INDCOM) have a maximum value of 0.8 and a minimum value of 0 with an average value of 0.39. Percentage independent director (INDDIR) has a maximum value of 0.5 and a minimum value of 0 with an average value of 0.114. The firm's size variable has a maximum value of 33,320 and a minimum value of 23.87 with an average value of 29.09. Leverage (Lev) has a maximum value of 5,073 and a minimum value of 0.037, with an average value of 0.54. For Carbon Emission Disclosures (CED) has a maximum value of 0.44 and a minimum value of 0.056 with an average value of 0.158.

Table 1 Descriptive statistics of research variables

| Variable | N | Mean | Std. Dev. | Min | Max |
|-----------------------|-----|----------|-----------|-----------|----------|
| Board_Size | 265 | 11.16604 | 41.32601 | 4 | 24 |
| INDCOM | 265 | 0.389512 | 0.130914 | 0 | 0.8 |
| INDDIR | 265 | 0.114752 | 0.119877 | 0 | 0.5 |
| ISO 14001 | 265 | 0.660377 | 0.474477 | 0 | 1 |
| Mcon | 265 | 0.237736 | 0.426502 | 0 | 1 |
| Firms_Size | 265 | 29.09083 | 1.6892 | 23.87006 | 33.32018 |
| Lev | 265 | 0.539317 | 0.602404 | 0.037094 | 5.073275 |
| ROE | 265 | 0.141030 | 0.284646 | -1.181664 | 1.75742 |
| Carbon Emission (CED) | 265 | 0.157652 | 0.086095 | 0.0555556 | 0.444444 |

Table 2 shows a matrix Pearson's correlation test that is aimed to investigate the power of the relation between variables. Board size having positive correlation and significant 1% with Carbon Emission Disclosures (CED). In other words, they show that companies with the number of members of the council are more abundant in the level of disclosure carbon emissions that higher. Interestingly, the independent director (INDDIR) had a negative correlation and was 10% significant with Carbon Emission Disclosures (CED). This result shows that a low percentage of INDDIR will have a high level of carbon emission disclosure. EMS has a positive and significant correlation of 1% with Carbon

Emission Disclosures (CED). In other words, companies that have ISO 14001 certification will be able to manage carbon emissions better and report them. Size has a positive and significant correlation of 1% with Carbon Emission Disclosures (CED) and companies that have large firms size will reveal more about their carbon emissions.

Table 2. Pearson's test correlation of research variables (N=265)

| | CED | Board Size | INDCOM | INDDIR | ISO 14001 | Mcon | Firm Size | Lev |
|-------------------|---------------------------------|----------------------------------|---------------------------------|--------------------------------|----------------------------------|-------------------|------------------|-------------------|
| CED | 1.000 | | | | | | | |
| Board Size | 0.360 ^{***} (0.000) | 1.000 | | | | | | |
| INDCOM | -0.064 (0.299) | -0.025 (0.682) | 1.000 | | | | | |
| INDDIR | -0.104 [*] (0.090) | -0.177 ^{***} (0.004) | 0.006 (0.918) | 1.000 | | | | |
| ISO 14001 | 0.262 ^{***} (0.000) | 0.307 ^{***} (0.000) | -0.039 (0.528) | -0.008 (0.894) | 1.000 | | | |
| Mcon | 0.088 (0.151) | 0.275 ^{***} (0.000) | 0.114 [*] (0.064) | -0.099 (0.107) | 0.283 ^{***} (0.000) | 1.000 | | |
| Firms Size | 0.362 ^{***} (0.000) | 0.593 ^{***} (0.000) | 0.012 (0.846) | -0.052 (0.395) | 0.288 ^{***} (0.000) | 0.072 (0.243) | 1.000 | |
| Lev | -0.074 (0.227) | -0.017 (0.787) | -0.037 (0.551) | -0.066 (0.282) | -0.207 ^{***} (0.001) | -0.094 (0.129) | 0.012 (0.852) | 1.000 |
| ROE | 0.001 (0.988) | 0.103 [*] (0.093) | 0.291 ^{***} (0.000) | -0.104 [*] (0.090) | 0.023 (0.709) | -0.071 (0.248) | 0.074 (0.233) | -0.031 (0.618) |

t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3 shows the results of the t-test, which explains that the average CED performance of companies that have military-connected is higher than companies that not military connected. Companies that have ISO 14001 certificates with military connections have a higher and significantly higher average than not military-connected companies. With respect to Board Size, Independent Commissioners (INDCOM) and leverage (Lev), companies with military connections are significantly higher than not military-connected companies.

Table 3. Independent T-test Result

| Variable | No-Military Connection | Military Connection | Coef | t-value |
|------------|------------------------|---------------------|-----------------------|---------|
| | (N=202) Mean | (N=63) Mean | | |
| CED | 0.153 | 0.173 | -0.020 | -1.609 |
| Board_Size | 10.604 | 12.968 | -2.364 ^{***} | -4.080 |
| INDCOM | 0.378 | 0.426 | -0.047 ^{**} | -2.539 |
| INDBOD | 0.117 | 0.107 | 0.010 | 0.569 |
| ISO 14001 | 0.589 | 0.889 | -0.300 ^{***} | -4.538 |
| Firms_Size | 29.031 | 29.282 | -0.250 | -1.026 |
| Lev | 0.574 | 0.430 | 0.144 [*] | 1.662 |
| ROE | 0.153 | 0.102 | 0.051 | 1.250 |

t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4 presents the results of Ordinary Least Square (OLS) regression about of Corporate Governance (Board Size, INDCOM, INDDIR), ISO 14001, Military Connection (MCon) to Carbon Emission Disclosure (CED) with additional control variables, Firms Size, Leverage (Lev) and Return of Equity (ROE). In regression of independent variable capable of being explained the dependent variable for 0,3470 or 34,70 % amounting, to as much as while the rest 69,53 % would be solved through the variables such research is the case environment planning, environmental committee and sustainability committee. Normality test in this regression model shows a significant level of 5% of 0.4714 and it can be concluded that the research data is normally distributed.

Table 4 Results of OLS Regression

| Variable | Carbon Emission Disclosure (CED) | | | |
|------------------|----------------------------------|-----------|-------|----------|
| | Coef. | Std. Err. | t | P>t |
| Board_Size | 0.003132 | 0.001451 | 2.16 | 0.032** |
| INDCOM | -0.027600 | 0.037498 | -0.74 | 0.462 |
| INDDIR | -0.024633 | 0.041509 | -0.59 | 0.553 |
| ISO 14001 | 0.027666 | 0.010991 | 2.52 | 0.012** |
| Mcon | 0.001204 | 0.011697 | 0.10 | 0.918 |
| Firms_Size | 0.011566 | 0.003532 | 3.27 | 0.001*** |
| Lev | 0.015768 | 0.008168 | 1.93 | 0.055* |
| ROE | 0.021263 | 0.017953 | 1.18 | 0.237 |
| N | 265 | | | |
| R ² | 0.3470 | | | |
| F | 0.0000 | | | |
| Normality | 0.4714 | | | |
| Industry Dummies | | Included | | |
| Year Dummies | | Included | | |

t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

As of the previous findings, Table 4 shows that the estimates of companies that have board members with compositions that have more positive relationships with disclosure of carbon emissions. We found that boosting the positive coefficients 0.00313 and significant at the 5% ($t = 2.16$). This finding suggests that H_1 supported, the number of members of the larger offer more experience and knowledge, which in turn strengthens governance companies and of managerial capabilities to make business decisions better to improve the company (Jackling & Johl, 2009; Kiel & Nicholson, 2005). It can be concluded that the number of directors in the company occupies an important role in the company to determine the disclosure of carbon emission policies and can be effective in monitoring companies in Indonesia, as they seek to achieve transparency to stakeholders and members of the stronger board have a tendency to deal with issues with emissions carbon. The results of this study are in accordance with Nasih et al., (2019); Yunus et al., (2016) that board size has a significant positive effect on disclosure of carbon emissions.

Regression results on board independent variables show the coefficient of independent commissioner (INDCOM) is negative -0.0276 and not significant ($t = -0.74$) and the coefficient of independent director (INDDIR) is negative -0.0246 and not significant ($t = -0.59$). This finding suggests that H_{2a} and H_{2b} not supported, because there are factors or a particular situation in Indonesia that is, the existence of institutional ownership in Indonesia relatively weaker than in other countries, although there are some level of concentration of ownership of which higher (Darmadi & Sodikin, 2013). Thus, institutional ownership could not working a role in increasing the maximum governance of companies such as the independent supervision in the more conservative in expressing information related to carbon emissions for all stakeholders. The results of this research are in accordance with Eng and Mak (2003); Nasih et al., (2019) that board independent has a significant negative effect on voluntary environmental disclosure. Hence, we recognize that disclosure of carbon emissions in this research is based on observation writer own, and it was not known if reducing carbon in the firm operations.

The Environmental Management System (EMS) shows a positive coefficient of 0.0276 and is significant at the 5% level ($t = 2.52$). This means that companies certified iso 14001 can improve disclosure of carbon emissions. The finding suggests that H_3 supported, it found that company with EMS good and having ISO 14001 be able to manage and control environment is more well as produce information emissions more credible associated carbon emissions. Malmberg (2002) stressed that the EMS is an important not only for duty organization management of the environment but also to the action of communicative and learning organization. Hence the presence of EMS company implying that the environmental management system would lead better in the process of managerial reporting and external in response to internal environmental concerns. The results of this research are in accordance with Prafitri and Zulaikha (2016); Rankin et al., (2011) that ISO 14001 has a significant positive effect on disclosure of carbon emissions.

Military connection (Mcon) shows a positive coefficient of 0.0012 and is not significant ($t = 0.10$). Hope a company that led by council member who studied the language of a military academy would be an increase in the disclosure of the carbon emission. This finding suggests that H_4 not supported, probably because the disclosure of carbon emissions in Indonesia is still voluntary. They do not prioritise that the disclosure of is voluntary in nature than the disclosure of mandatory and skills that belong to them as a communication that effective with subordinate has not been able to walk on both terms of the disclosure of voluntary. Because, in any structure, the members of the council have differing aims and a different way to improve the company performance. But, in research conducted by Benmelech and Frydman (2015), a company that is led by local council members background as an army does not use excessive leverage, small involved in cheating the scheme better over the company and industry has experienced a fall. Harymawan (2018) research conducted in Indonesia found that companies that have leaders with a military background have the power to get low interest rates and have low debt.

On control variables suggest that the firm's size has a positive influence on the disclosure and significant to carbon emissions. Firm's size will be more sensitive to engage in practice disclosure environment. Results of this research are in accordance with Nasih et al., (2019); Bae Choi et al., (2013). Leverage shows a positive and significant effect, and this is to reveal carbon emissions require huge costs, according to research Yunus et al., (2016). Return of Equity (ROE) It has some positive effects and insignificant possible causes for equity of resources is not specifically used to support activity as the external environment and carbon emissions but, was more focused on the achievement of prosperity the stockholder.

Table 5 shows the results of the robustness test regression. In regression testing usually find things that are violated in testing traditional assumptions. This testing be taken to reduce bias the results of research and important to analyze data which are affected by outlier and minimize the influence of outlier against a model so that it will obtained a model that is best. This finding is also strong, with almost no difference with OLS regression, with a significant level.

Table 5 Results of Robust Regression

| Variable | Carbon Emission Disclosure (CED) | | | |
|--------------------|----------------------------------|-----------------|-------|----------|
| | Coef. | Robust Std. Err | t | P>t |
| Board_Size | 0.003132 | 0.001498 | 2.09 | 0.038** |
| INDCOM | -0.027600 | 0.038011 | -0.73 | 0.468 |
| INDBOD | -0.024633 | 0.034941 | -0.70 | 0.481 |
| ISO 14001 | 0.027666 | 0.010689 | 2.59 | 0.010** |
| Mcon | 0.001204 | 0.012691 | 0.09 | 0.924 |
| Firms_Size | 0.011566 | 0.003379 | 3.42 | 0.001*** |
| Lev | 0.015768 | 0.007956 | 1.98 | 0.049** |
| ROE | 0.021263 | 0.017209 | 1.23 | 0.221 |
| N | 265 | | | |
| R ² | 0.3470 | | | |
| Adj-R ² | 0.3021 | | | |
| Industry Dummies | | Included | | |
| Year Dummies | | Included | | |

*t statistics in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01*

Conclusion

Based on the results of the analysis and discussion discussed previously, we obtain four conclusions based on the conceptual framework and hypothesis. H₁ research results are supported; it is board size has influences on carbon emotions, especially in manufacturing companies in Indonesia. Which means whatever the number of directors will determine the carbon emission's disclosure. The results of the study H_{2a} and H_{2b} not supported; it means that board independent has negative influences and insignificant. Board Independent in the company can not afford to oversee the performance, so the supervision in company will not work effectively. On the outcome of H₃ showed ISO 14001 that supported; it means in companies that had better environment management

system that he should have ISO 14001 would be capable of handling of carbon emission footprint but also result in a credible information about the carbon emission. The results of research on H₄ show that military connections are not supported. This means that leaders with a military background can not focus on voluntary reports but, only focus on mandatory reports and their have a way to maintain the company's going concern by paying attention to company performance such as profitability dan leverage. The results showed variabel control that firm's size has high disclosure carbon emissions. Company with leverage high also having disclosure of carbon emissions high, because the company need money for voluntary to perform report. While, ROE have no significant impact on carbon emissions disclosure.

This research can consider the function of characteristics of corporate governance that are appropriate and appropriate for companies, governments and countries. Bearing in mind that disclosure of information related to carbon emissions is highly related to stakeholders can contribute because the development and implementation of the ISO 14001 innovation strategy policy can be emphasized to support the implementation of carbon emission reduction strategies towards clean or zero emissions.

Appendix

Table A1 Carbon Emissions Disclosure Checklist

| Category | Item | |
|---|---|---|
| Climate Change: risks and opportunities | CC1 - risk assessment / description (regulation, physical or general opportunity) related to climate change and actions taken or to be taken to manage risk | |
| | CC2 - assessment / description of current (and future) financial implications, business implications and opportunities for climate change | |
| | GHG emissions accounting | GHG1 - description of methodology used to calculate GHG emissions (e.g. GHG or ISO protocol) |
| | | GHG2 - verification of external quantities of GHG emissions - if so by whom and on what basis |
| | | GHG3 - total GHG emissions – tons metric |
| | | GHG4 - emitted CO ₂ - disclosure of Scope 1 and 2, or Coverage 3 of direct GHG emissions |
| | | GHG5 - disclosure of GHG emissions by sources (e.g. coal, electricity, etc.) |
| GHG6 - GHG emissions disclosures based on the level of facilities or segments | | |
| GHG7 - comparison of GHG emissions with previous years. | | |
| Energy consumption | EC1 - total energy consumed (e.g. Tera-joule or map-joules) | |
| | EC2 - quantification of energy used from renewable sources. | |
| | EC3 - disclosures based on type, facility or segment | |
| GHG reduction and cost | RC1 - details of plans or strategies to reduce GHG emissions | |
| | RC2 - specification of the level of GHG emission reduction target and target year | |
| | RC3 - emission reductions and related costs or savings achieved to date as a result of the reduction plan | |
| | RC4 - future emissions costs are taken into account in planning capital expenditures | |
| GHG emission accountability | ACC1 - indication of which board committee (or other body accountability executives) has full responsibility for actions related to climate change | |
| | ACC2 - mechanism description by which board (or other executive body) reviews the progress of the company regarding climate change. | |

Source: Bea Choi et al., (2013)

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