

## CORPORATE GOVERNANCE AND CARBON EMISSION PERFORMANCE: EVIDENCE IN MALAYSIA

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**Abstract:** This research delves into the intersection of corporate governance and carbon emission performance in Malaysia, shedding light on the pivotal role governance practices play in fostering environmental sustainability. The primary objective of this study is to investigate how key corporate governance mechanisms, namely CEO duality, Board size, and Board meetings, influence carbon emissions performance in the Malaysian context. This study employs panel data regression, and the results indicate a positive correlation between Carbon Dioxide (CO<sub>2</sub>) emissions and all other variables in the dataset. This implies that as CO<sub>2</sub> emissions increase, there is a tendency for the other variables [board size, CEO-chairman duality, board meetings, and Return on Assets (ROA)] to also increase. In regression findings, CEO-duality does not significantly impact corporate governance, while a larger board size and more frequent board meetings positively influence effective corporate governance for decarbonisation. Surprisingly, lower ROA percentages are associated with better decarbonisation performance in firms. This suggests that, despite CEO-duality being less relevant, board-related factors and ROA play significant roles in the relationship between corporate governance and decarbonisation efforts. The study underscores the importance of viewing carbon emissions as a critical corporate outcome, encouraging companies to prioritise and improve their carbon emission performance. Particularly for firms facing less pressure from the takeover market, the study advocates for implementing policies to mitigate carbon emissions, recognising the growing global concern surrounding climate change. The government should enhance the regulatory framework by updating the Companies Act and ensuring stricter compliance with the Malaysian Code on Corporate Governance (MCCG). Strengthening corporate governance in Malaysia can enhance transparency and accountability in carbon emission reporting, encouraging companies to adopt sustainable practices.

Keywords: Corporate governance, carbon emission, agency theory, climate change, Malaysia.

### Introduction

Climate change is having a considerable impact in Malaysia. Increasing temperatures are likely to greatly increase the number of heatwaves occurring annually. Moreover, variations in precipitation may increase the frequency of droughts and floods in various local areas. A rise in sea level may inundate some coastal areas. These impacts are expected to have numerous environmental and socioeconomic effects, exacerbating existing environmental issues and reinforcing inequity.

Malaysia is a country that has experienced significant economic growth in recent years.

One of the issues regarding carbon emissions in Malaysia is that carbon emissions have continued to increase in recent years. The lack of concern for carbon emissions in the manufacturing context is very limited for Malaysians (Yudi Fernando, 2017). In 2020, Malaysia's carbon emissions were estimated to be around 251 million metric tonnes, with the energy sector being the largest contributor. Therefore, it has impacted on the environment and society.

According to IQAir, the air pollution issue continues to be a problem in Malaysia, particularly in non-rural areas. In 2022,

Selangor was ranked as the 1<sup>st</sup> most polluted city in Malaysia. Air pollution can have significant health impacts, including respiratory and cardiovascular diseases. Other than that, climate change still impacts agricultural productivity in Malaysia (Zakaria & Singh, 2023). Changing rainfall patterns and temperature can lead to reduced crop yields, affecting the availability and quality of food.

Overall, carbon emissions and their impact on the environment and society continue to be a significant challenge for Malaysia. The country needs to take action to reduce emissions, conserve its natural resources, and mitigate the effects of climate change by controlling corporate governance. There is growing recognition of the importance of addressing climate change, and many countries have set targets for reducing their Greenhouse Gas Emissions (GHG).

Malaysia is no exception, and the government has implemented various policies and initiatives to reduce the country's carbon footprint. Hence, having well-built corporate governance is important to overcome the issue of reducing carbon emissions. Long-term sustainability can be achieved through sustainable business practices, including investing in renewable energy and contributing to a more sustainable future. Therefore, companies with strong corporate governance must comply with rules and regulations.

In this context, it is important to understand corporate governance's role in determining a company's environmental performance. Effective corporate governance can help ensure that a company considers environmental concerns in its decision-making processes and adopts practices that reduce carbon emissions. For example, a company with a strong board of directors committed to sustainability may be more likely to prioritise investments in renewable energy or adopt more efficient production processes.

In recent years, corporate governance and carbon emissions performance have become crucial topics, especially in sustainable development and environmental protection. The

increasing severity of weather events linked to climate change, largely caused by carbon emissions from various sources, has heightened global concerns (Zakaria & Singh, 2023). In Malaysia, global warming is a significant environmental issue. This article aims to investigate how corporate governance influences the performance of Malaysian companies in terms of carbon emissions. It seeks to understand the role of corporate governance in companies' environmental priorities and efforts to reduce their carbon footprint.

Other than that, the study aims to provide insights into enhancing environmental performance through effective corporate governance practices, contributing to the broader global conversation on sustainable development and climate change mitigation (Zakaria & Singh, 2023).

This study examines the relationship between corporate governance and carbon emissions performance in Malaysia. By analysing data from a sample of Malaysian companies, the study will explore the extent to which corporate governance practices are associated with better environmental performance.

Correspondingly, the study's findings will provide insights into how companies can improve their environmental performance through effective corporate governance practices. It may have implications for policymakers, investors, and other stakeholders interested in promoting sustainable development and mitigating the impact of climate change.

## Literature Review

In recent years, the intersection of corporate governance and environmental sustainability has gained significant attention globally. As Malaysia strives to address the challenges of climate change and reduce carbon emissions, understanding the relationship between corporate governance practices and carbon emission performance becomes crucial.

Several studies have emphasised the importance of corporate governance mechanisms in influencing environmental

performance, including carbon emission reduction. The agency theory suggests that effective governance practices, such as board independence and board size, can align the interests of management and shareholders toward environmental sustainability. Hence, corporate governance plays an important role in reducing carbon emissions that affect the climate change issues that have arisen today.

### **Corporate Governance Practices in Malaysia**

Corporate governance practices have become one of the issues of concern in Malaysia due to the introduction of the Malaysian Code of Corporate Governance (MCCG) as a part of the listing rules in Bursa Malaysia (Zabri, 2016). Note that corporate governance practices in Malaysia have been used to direct and manage the business and affairs of the company toward enhancing business prosperity and corporate accountability with the ultimate objectives. Corporate governance in Malaysia is governed by various regulations and guidelines aimed at promoting transparency, accountability, and ethical conduct in companies (Zabri, 2016).

It is worth noting that the corporate governance landscape in Malaysia is continually evolving, and regulatory frameworks are subject to periodic updates and amendments. Thus, companies are expected to comply with applicable laws, regulations, and guidelines and strive to adopt best practices to enhance their corporate governance standards.

Financial investors have become increasingly conscious of climate change as a growing issue. Several international and national programs have been launched to combat global warming and to motivate economic players to take action to speed up the transition to a low-carbon economy.

A corporate board can guide or facilitate the management in using resources efficiently, which can help them gain legitimacy from the relevant stakeholders. Thus, the board's characteristics are expected to influence a firm's environmental performance. In addition, some studies have investigated the association between selected

corporate governance attributes and carbon emissions-related disclosures (Pallab Kumar Biswas, 2018).

However, most studies are set in the context of developed countries such as the United States of America, the United Kingdom, Australia, and Canada, with a small number concentrating on developing countries (Daniel Kouloukoui, 2019).

Agency theory plays a significant role in corporate governance by providing a framework to understand and analyse the relationships and conflicts of interest between various corporate stakeholders (Amira Jamil, 2020). The key premise of agency theory is a natural misalignment of interests between principals and agents. Principals seek to maximise their wealth and value, while agents may have their objectives and may not always act in the best interests of the principals. This divergence of interests can lead to agency problems or conflicts.

By applying agency theory principles within corporate governance, companies can align the interests of shareholders and managers toward reducing carbon emissions. This can lead to more effective oversight, enhanced accountability, and adopting sustainable practices, ultimately contributing to the global efforts to mitigate climate change.

### **Corporate Governance and Carbon Emission in Malaysia**

After controlling for a firm's likelihood to provide voluntary carbon disclosures, some research found that carbon emissions are negatively related to firm value (Leng, 2004). This negative impact is more prominent for firms in countries with national carbon emission trading schemes and stringent environmental regulations. Furthermore, corporate governance reduces the negative value effect of carbon emissions, indicating that shareholders have favourable perceptions regarding the carbon management ability of firms with good corporate governance. Cultural contexts such as uncertainty avoidance and long-term orientation also affect the value

effect of risks and future liabilities associated with carbon emissions (Tze San Ong, 2021).

Value-decreasing effect of carbon emissions is weaker in countries characterised by high uncertainty avoidance and long-term orientations (Bobae Choi, 2020). The Malaysian government signed the Paris Agreement in 2016 and committed the nation to reduce its GHG. Malaysia agreed to reduce its 2030 GHG emissions by 45% using the 2005 baseline emissions. The Malaysian government imposed a palm biodiesel mandate to meet its GHG mitigation. The transportation sector must blend a minimum of 10% palm biodiesel into diesel, or B101. In 2021, Malaysia produced 1,050 million litres of biodiesel and consumed 10.2 billion litres of diesel. Nevertheless, the COVID-19 pandemic disrupted supply chains and raised palm oil prices, making palm biodiesel more expensive (Wahab, 2014).

Unfortunately, renewable energy, such as biodiesel, diverts food away from humans and animals and raises food prices. Malaysia should research alternatives to palm biodiesel and find sustainable energy sources to mitigate its GHG emissions.

Moreover, with the global shift towards achieving net-zero GHG emissions, corporate entities need to formulate distinct strategies, mechanisms, and capabilities to navigate this transition. He *et al.* (2021) research indicates that carbon management and accounting are emerging as specialised frameworks in response to the escalating global carbon emissions.

The role of board meetings is noteworthy in line with the challenges and outcomes related to corporate governance variables concerning carbon performance. Board meetings are a crucial indicator for evaluating the company's efficacy in management and the board's diligence in overseeing financial and non-financial activities (Nazim Hussain, 2018). The frequency of board meetings is a key aspect of board activities, contributing to the overall effectiveness of a company's performance.

The board size primarily reflects the number of directors actively participating in board activities. Typically, the complexity of business operations, firm size, and ownership structure influence the determination of the board size. Additionally, the dynamics within a group and the collective decision-making process, as perceived through the agency lens, suggest that a smaller board is more conducive to efficient company management (Azlan Amran, 2014). In contrast, Prado-Lorenzo and Garcia-Sanchez (2010) argue that a larger board size can impact the effectiveness of the executive board concerning GHG information.

Considering that corporate governance is a major sustainability mechanism of organisations (Green, 2021), scholars have argued that one of the strategies for achieving decarbonisation targets is strengthening corporate governance mechanisms. Thus, the nexus between corporate governance and carbon emissions performance is gaining traction.

Carbon performance stands out as a distinct category within corporate social performance, specifically isolating carbon emissions from other aspects of corporate social responsibility. The escalating significance of climate change is accentuated by the impact on a company's operations and activities. Consequently, internal governing bodies are pivotal in deciding to manage and curb carbon emissions. This strategic focus is imperative for companies aspiring to gain a competitive edge and transition towards a future with a reduced carbon footprint (Haque, 2017; Tang, 2020).

However, despite the well-acknowledged relevance of corporate governance in improving environmental sustainability practice, the review of extant literature on the association between corporate governance and carbon emissions reduction reveals some blow. Thus, the hypothesis of this study is as follows:

Hypothesis 1: There is a positive relationship between corporate governance and carbon emissions performance in Malaysia.

## Methodology

This article selected data from 2010 until 2021 with the observation of 622 companies, excluding financial institutions and other missing data. Note that all data collection for this research is based on secondary data. Organisational research usually uses secondary data because the information is already collected and may be documented by the public as internal and external material to the organisations and accessible online (Hengameh Karimi, 2019).

This research has two types of important variables: Dependent and independent variables. The dependent variable for this research is carbon emissions. This study includes other independent variables as the control variables to be measured in the regression model, which are CEO dualities, board size, and board size.

Other than that, the control variable is ROA. The Return on Assets (ROA) is employed as a control variable to gauge the overall financial performance of a company. As a measure of profitability, ROA helps assess how efficiently a company utilises its assets to generate earnings. The rationale for including ROA as a control variable in the context of carbon emission performance lies in the potential connection between a company's financial health and environmental practices. Consequently, the appropriate model specification is developed using all those variables.

## Research Model

This study examines how corporate governance can reduce carbon emissions in Malaysia. For the dependent variable, carbon emissions, the operational is Malaysia's total carbon emissions. Hence, reducing carbon emissions will be measured with the relations of the independent variables, which are CEO duality, board size, and board meetings. For CEO duality, the operational is the number of board members holding the post of CEO and board chair simultaneously. In contrast, for the board, size will be measured as the total number of directors on the board. Operationalisation board meetings will be measured by the number of scheduled

meetings within a specified timeframe, for example, annually.

Aside from that, the ROA acts as a control variable and will be calculated as the company's net income divided by its average total assets over a specific period. ROA in corporate governance is a key metric for assessing a company's financial performance and operational efficiency. By controlling for ROA, isolate the unique impact of governance structures on carbon emissions, providing insights into effective strategies for emission reduction within financially successful companies. To assess their success in reducing carbon emissions, this study incorporated the model as follows:

$$CO_2t = \alpha_0 + \beta_1 CGit + \beta_2 ROAit + et,$$

where

$CO_2$ : Carbon emission

CG: Corporate governance (BOARD\_SZ, CEO\_CHAIR, BOARD\_MEET)

ROA: Return on assets

## Statistical Analysis

This study employed descriptive analysis to clearly understand the data by summarising its main features, including measures of central tendency (mean, median, min, max).

Correspondingly, to answer the study's objective, which is to examine the relationship between corporate governance and carbon emissions performance in Malaysia, this study ran for panel data regression analysis. Panel data regression analysis is a statistical technique employed to examine complex data sets involving multiple dimensions and measurements taken over some time. This study chose the random effect model as it is the most suitable and robust model for this study.

## Results and Discussion

The descriptive statistics in Table 1 present that the mean for carbon emission is 3104958, with a

standard deviation of  $1.30e + 07$ . The minimum is 578, while the maximum is  $1.98e + 08$ . This study did not use the natural log for the data on Carbon Dioxide ( $CO_2$ ) because it is permissible and is supported by Shumway (2000). The mean for board size is 9.237942, while the standard deviation is 2.299193. The minimum board size is 1, while the maximum is 17. For CEO

duality, the mean is 0.1380417, with a standard deviation of 0.345221. The minimum is 0, and the maximum is 1. The mean for board meetings is 8.58075, with a standard deviation of 4.46871. The minimum is 4, while the maximum is 32. For ROA, the mean is -4.627751, with 448.0957 for the standard deviation. The minimum is -45987.34, while the maximum is 2.921781.

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
CO2_EMISSION	622	3104958	$1.30e + 07$	578	$1.98e + 08$
BOARD_SZ	622	9.237942	2.299193	1	17
CEO_CHAIR_	622	.1380417	.345221	0	1
BOARD_MEET	622	8.58075	4.46871	4	32
ROA	622	-4.627751	448.0957	-45987.34	2.921781

The results of the panel data analysis to test the hypothesis of this study are shown in Table 2. Panel data analysis involved random effects that have three levels of significance. For further analysis, the  $p$ -value was smaller than 1% ( $p < .01$ ), the  $p$ -value smaller than 5% ( $p < .05$ ), and lastly, the  $p$ -value smaller than 10% ( $p < .1$ ).

Panel data regression is a statistical method used to analyse the relationships between variables in a dataset that includes both within and between-group information. In this context, the panel regression analysis with random effects is used to study the relationships between  $CO_2$  emissions, board size, CEO-chairman duality, board meetings, and ROA. The panel data regression analysis helps to understand the relationships between the variables and their impact on company performance.

In the random effect in Table 2, Panel data regression analysis, board size (BOARD\_SZ\_), board meeting (BOARD\_MEET\_), and ROA

were shown to have significant relationships with the dependent variable carbon emissions. This result is supported by Abbas *et al.* (2023) and Gonenc and Krasnikova (2022). It demonstrates that the board's size could impact environmental policy decisions. Note that larger boards may bring different viewpoints, resulting in more complete environmental initiatives.

In terms of board meetings, more frequent meetings might allow for better monitoring and discussion of environmental issues, leading to more proactive carbon emission reduction strategies. In addition, a higher ROA might provide more financial resources for investment in sustainable technologies and practices.

The result from panel regression suggests that CEO duality did not influence corporate governance, as the  $p$ -value is insignificant. If a variable is insignificant in the panel regression, it suggests that its effect on the dependent variable is not statistically significant after controlling for other factors in the model.

Table 2: Panel data regression analysis

Variables	RE
BOARD_SZ_	29.43408* (0.001)
CEO_CHAIR_D	- 28.74966 (0.612)
BOARD_MEET_	13.46186* (0.001)
ROA	- 818.0726* (0.000)
_cons	184.1769 (0.046)

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

In practical terms, non-significant variables may not be useful for making predictions or drawing conclusions about the dependent variable within the given statistical model. CEO-duality is non-significant in the pairwise correlations. However, its theoretical relevance and potential impact on other variables or the overall model should be carefully considered before deciding on its relevance. The coefficient of BOARD\_SZ has shown to be positive and significant at the one per cent level ( $p < .01$ ).

The finding indicated that the larger the size of the board, the more effective the corporation's governance toward decarbonisation will be. The same goes for BOARD\_MEET\_. The more frequent, the more commitment toward reducing carbon emissions.

Interestingly, the coefficient of ROA is negative and significant. This suggests that lower ROA percentages are associated with better decarbonisation performance in firms. Thus, implementing stricter corporate governance standards and mandatory carbon emission reporting in Malaysia can drive companies toward greater transparency and environmental responsibility. Providing incentives for sustainable practices and integrating ESG criteria into corporate decision-making can promote long-term sustainability and alignment with national and international environmental goals.

## Conclusions

This research in Malaysia finds that strong corporate governance helps companies make eco-friendly decisions, contributing to sustainability. It aligns with agency theory, suggesting that good governance minimises conflicts between company owners and managers. The study looks at how specific governance practices affect carbon emissions in Malaysia.

Other than that, the findings emphasise the importance of following agency theory principles in governance to address environmental challenges tied to carbon emissions. It suggests that with effective governance, companies can align interests, promote responsible actions, and reduce carbon emissions. The takeaway is that lower carbon emissions are positive for companies.

The study recommends that companies, especially those less concerned about takeovers, focus on improving their carbon performance to address climate change concerns.

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### Conflict of Interest Statement

The authors declare that they have no conflict of interest.

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