STRATEGIES IN MITIGATING CLIMATE CHANGE: THE CASE OF PALM OIL INDUSTRY IN MALAYSIA

Jamaliah Abdul Majid[1,a*], Rohaida Abdul Latif[2,a], and Nooraisah Katmun[3,b]

[1, 2] *Tunku Puteri Intan Safinaz School of Accountancy, College of Business, Universiti Utara Malaysia, Sintok, Kedah, Malaysia*
[3]*Faculty of Management and Economics, Universiti Pendidikan Sultan Idris (UPSI), Tanjung Malim, Perak,* Malaysia
[a]*jamaliah@uum.edu.my*
[b]*rohaida@uum.edu.my*
[c]*nooraisah@fpe..upsi.edu.my*

*Corresponding Author: jamaliah@uum.edu.my

Abstract**:** *In this study, we explore strategies in mitigating climate change implemented by listed companies in the palm oil industry in Malaysia. The results based on 129 firm-years from 2018 to 2020 show that the majority of the climate change mitigation strategies focused on the governance and legitimation aspects. Less attentions were given to compensation and innovation aspects, particularly on market entrance related to low-carbon features. Focusing on the sector and stakeholder engagements, the results reveal four types of climate change strategic response portrayed by the palm oil companies examined. These are indifferent, beginner, emerging, and active. This study has contributed to the climate change literature, particularly within emerging markets, by demonstrating that palm oil companies' climate change mitigation strategies are evolving in response to various initiatives within the palm oil industry.*

Keywords: Climate change, Mitigation, Malaysia, Palm Oil, Strategies

1. Introduction

How do firms respond to climate change issues? Answers to this question are crucial for firms in the palm oil industry, as climate change and palm oil industry are affecting each other. Increased frequency and severity of adverse weather conditions disrupt planting activities and land arability of the palm oil tree. At the same time, the cultivation of palm oil, especially through deforestation intensify the climate change issue via the release of greenhouse gas emission (GHG). The increasing carbon dioxide and other GHG emissions is expected to trigger climatic changes (Baethgen, 2010) and resulted in climate risks, which are observed in the form of extreme weather, heat waves, droughts, frequent flooding, dengue, etc. (Espinosa, 2019). Consequently, climate change and related environmental issues are ranked as the top five risks globally (World Economic Forum, 2020).

The detrimental effects of the climate change have resulted in external stakeholders, such as regulatory authorities, market participants, activist investors, and environmental non-governmental organizations to pressure corporate sectors to reduce GHG emissions (Abdul Majid et al., 2023a; Cadez et al., 2019; Bottcher and Muller, 2015; Reid and Toffel, 2009). For example, investor groups requested the Securities and Exchange Commission in the United

States of America (USA) for additional corporate disclosure on climate change issues (Johnson, 2021). In Malaysia, non-governmental organizations including environmental activists impose increasing pressures on the palm oil industry for environmental issues including deforestation, loss of biodiversity, and greenhouse gas emissions (Corciolani et al., 2019).

With these pressures, government, businesses and non-governmental organizations have introduced various sustainability initiatives related to palm oil. Among the initiatives are certifications, such as Roundtable on Sustainable Palm Oil (RSPO), Malaysian Sustainable Palm Oil (MSPO), Indonesian Sustainable Palm Oil (ISPO), and International Sustainability and Carbon Certification (ISCC). In line with the pressures encounter by the palm oil industry in Malaysia, the present study attempts to explores strategies in mitigating climate change undertaken by palm oil companies in Malaysia.

2. Literature Review

Corporate strategic responses towards environmental issues, including climate change mitigation, can be categorized using typology or continuum-based models. The continuum-based model views the corporate strategic responses as a linear classification scheme. This approach assumes that companies experience continual improvement in environmental performance over time. Accordingly, there must be one appropriate class into which each strategic response can be classified at one point in time. For example, Jeswani et al. (2008) identified four types of climate change strategic response, namely, indifferent, beginner, emerging, and active. Thus, in their case, a company's strategic response cannot at the same time, be categorized in the 'indifferent' category (e.g., companies that are not concerned with environmental issues) and 'active' category (e.g., companies with a fully developed environmental management system).

Unlike the continuum-based model, the typology-based model does not assume progressive improvement of the strategic response. Instead, this model views that corporate strategic response to environmental issues can have different characteristics. Thus, the typology-based model categorizes the strategic response by its close resemblances to a template. For example, Sprengel and Busch (2011) recognized four types of strategic response, i.e., minimalists, regulation shapers, pressure managers, and emission avoiders. In this context, a company's strategic response can be a combination of regulation shapers and pressure managers, simultaneously. The present study builds on related prior research and attempts to examines strategies in mitigating climate change by companies in the palm oil industry using the continuum-based model.

Thus far, studies on climate change mitigation strategies focus largely on industries that generate significant GHG emissions, such as, oil and gas, energy, and automobile industries (Abdul Majid et al., 2023b; Cadez & Czerny, 2016; Damert & Baumgartner, 2018; de Abreu et al., 2017). There is a lack of studies that examine climate change mitigation strategies in agriculture industry even though agriculture activities are inevitably related to climate change. In addition, even though there are a number of studies on palm oil, these studies revolve around the technical aspect of the palm oil produced (Corciolani et al., 2019: 1118; Hansen et al., 2015 cited in Corciolani et al., 2019). Studies on the non-technical aspects of the palm oil, such as the social and environmental issues is still lacking (Corciolani et al., 2019: 1118).

3. Research Method

This study focuses on all palm oil companies listed on the Bursa Malaysia from 2018 to 2020. Overall, there are 129 observations or 43 companies from 2018-2020. The collection of data on the climate change mitigation strategies involves three stages. In the initial stage, we undertook content analysis of companies' annual reports, sustainability statements contained in the annual reports, and the sustainability reports, using the rating scheme, as developed by Damert and Baumgartner (2018).

In the second stage, to further understand the various strategies in mitigating climate change undertaken by the palm oil companies, we conducted interviews with sustainability officers in palm oil companies in Malaysia.

Finally, in the third stage, based on the interview and additional readings, we revise the rating scheme to suit the palm oil industry by removing strategies related to emission trading. Using the revised rating scheme, we re-examined sustainability statements that are contained in the annual reports, sustainability reports, companies' website, and relevant websites that discussed the company's sustainability initiatives. Two raters were employed to undertake the content analysis.

4. Results, Discussion and Conclusion

Figure 1 depicts the scores obtained by listed companies in the palm oil industry in their overall strategies in mitigating climate change. The results show that the scores improved from 2018 to 2020.

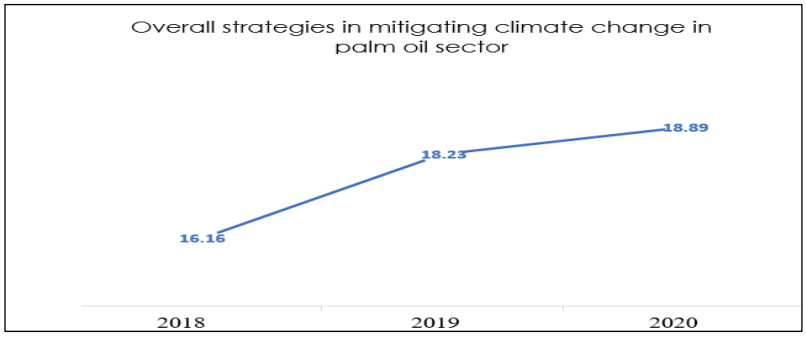

Figure 1: Overall strategies in mitigating climate change

To explore the various categories of climate change mitigation strategies adopted, this study analysed each of the strategic intents, as underlined by Damert and Baumgartner (2018). These strategic intents focus on four aspects, namely, governance, innovation, compensation, and legitimation. The governance aspect of climate change mitigation strategies covers GHG management and policy development, organizational involvement, and risk management that relate with climate change. The innovation aspect focuses on process improvements, product improvements, and new markets and product development. In this study, the compensation aspect focuses only on supplier involvement. As stated earlier, this study excludes the emission trading. Lastly, the legitimation aspect covers sector and stakeholder cooperation, corporate reporting, and political activities. Figure 2 and Table 1 presents a detailed analysis of the different aspects of the climate change mitigation strategies implemented by these companies.

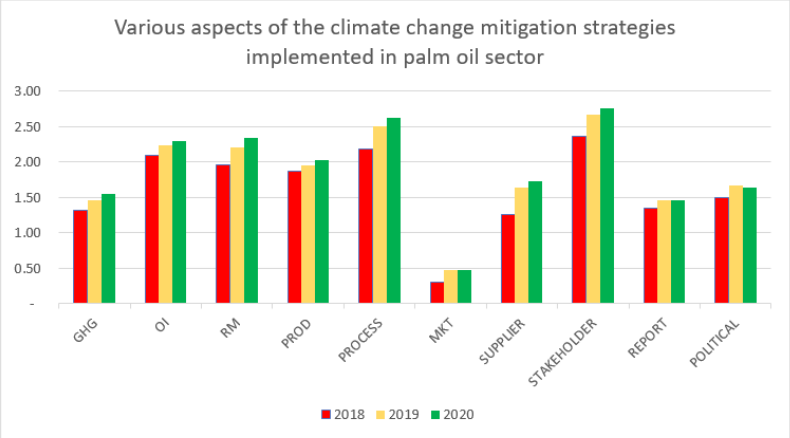

Figure 2: Various aspects of the climate change mitigation strategies implemented in the palm oil industry

Table 1 shows that governance strategies generate the highest overall score of 1.94, follow by legitimation (1.87), innovation (1.60) and compensation (1.54). These results highlight the need to enhance the climate change mitigation strategies related to innovation and compensation. The table also shows that the main strategy that palm oil companies implemented to mitigate climate change is through engagement/cooperation with the sector and stakeholders. From our content analyses, these engagements include workshops, community activities and conservation outreach programs conducted by palm oil companies with various stakeholders.

Table 1: Scores of the climate change mitigation strategies across different aspects

Aspects	Overall score	Aspect with the highest score	Score	Aspect with the lowest score	Score
Governance	1.94	Organizational involvement	2.20	GHG emissions	1.44
Innovation	1.60	Process improvements	2.43	New markets & product development	0.42
Compensation	1.54	Supplier involvement	1.54	-	-
Legitimation	1.87	Sector & stakeholder cooperation	2.59	Corporate reporting	1.42

To identify firms' strategic response toward climate change mitigation, this study performed a TwoStep cluster analysis using the scores for the sector and stakeholder cooperation. The cluster analysis generates four clusters (see Table 2). Following Jeswani et al. (2008), these cluster are identified as indifferent, beginner, emerging, and active.

Table 2 shows that the majority of the palm oil companies are in the emerging cluster. Companies in this cluster scored high on engagement with sector and stakeholders. The mean score of 4.00 (from a scale of 0 to 4) suggests that they have proactively engage with various stakeholders in their efforts to mitigate climate change. The corporate strategy observed in the

emerging cluster resembles emerging (Jeswani et al., 2008), cautious reducer (Lee, 2012), and legitimating reducer (Damert and Baumgartner, 2018) clusters identified in prior studies.

Table 2. Mean scores of the four climate change mitigation strategies via the sector and stakeholder cooperation

Cluster	Mean	Median	N
Indifferent	0.00	0.00	20
Beginner	1.22	1.00	9
Emerging	3.00	3.00	81
Active	4.00	4.00	19

In sum, this study has examined climate change mitigation strategies implemented by listed companies in the palm oil industry. The results show that as a whole, the most applied strategic intents on climate change mitigation strategies are from the aspects of governance, followed by legitimation while the least strategic intents are from the compensation aspect. Focusing specifically on the strategies to mitigate climate change through the sector and stakeholder engagements, the results suggest that the majority of the palm oil companies are in the emerging cluster, and they have embarked on numerous initiatives in their efforts to mitigate climate change.

This study has contributed to the climate change literature, especially in an emerging market, by demonstrating that the climate change mitigation strategies adopted by palm oil companies are evolving in line with the various initiatives put forward in the palm oil industry.
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