

IEBMC 2019

9th International Economics and Business Management Conference

HARD AND SOFT CARBON DISCLOSURES: MALAYSIA'S CARBON INTENSIVE INDUSTRIES

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Abstract

This paper aims at investigating the quality of voluntary carbon disclosure (VCD) in the annual report of Malaysian public listed companies operating in carbon-intensive industry. The content analysis disclosure index developed links climate change, carbon and greenhouse gas (GHG) reporting requirement with fundamental principles of the hard and soft disclosure items that reporting index. Using a sample of 1,749 observations over a period of 2010-2016, the main findings depicts that although the VCD has been increasing over time both in number of reporting public listed companies and in the VCD scores for all companies in our sample, however, the quality of the VCD remains relatively low. Much attention was given to soft disclosure rather than hard ones. The score suggests that VCD practices of these public listed companies are more symbolic rather than substantive. This paper sheds a light on the necessity to have carbon disclosure regulated and independently assured.

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Keywords: Carbon disclosure index, carbon-intensive industry, climate change, greenhouse gas, hard and soft disclosure, isomorphism.



1. Introduction

Carbon emissions have caused an abrupt climate change which has become a point of international concern. The worrisome part is that global carbon dioxide (CO₂) emissions have exhibited an upward trend in a dangerous scale. Between 2014 and 2016, global emissions remained largely flat, but it grew 1.6 percent in 2017 and a further 2.7 percent in 2018. It has been estimated that the rate of increase in 2019 will reach the highest levels on record and show no sign of peaking (Mulvaney, 2019). Such a shock increase in CO₂ emission creates a need for a more serious action to deal with the threat of climate change.

Despite the fact that the Malaysian government has taken various proactive measures in addressing climate change issues, the efforts to combat climate change will not be accomplished without firms' involvement in reducing carbon emissions. The most called upon to react are firms operating in carbon-intensive industries because these industries are the largest emitters of carbon that is largely responsible for climate change (Huisingsh et al., 2015). Voluntary carbon disclosure (VCD) represents an essential part of climate change mitigation activities (Kalu et al., 2015) and reflects the instrumental actions for carbon emissions reductions (Borghei et al., 2016; Luo et al., 2013). VCD also is highly relevant at exerting pressure on companies to comply with environmental norms and standards (Debnath, 2019). Through VCD, companies could explain how climate change is being understood and managed at the strategic level (Van Zijl et al., 2017).

However, the efficacy of VCD relies on its ability to enable reader obtaining a comprehensive and accurate description of the company's carbon performance and the impact of its activities (Talbot & Boiral, 2015). In order to truly better reflect a high-quality VCD, the report should involve better integration of information, more detailed reporting and the use of independent assurance to test selected disclosure (Pitrakkos & Maroun, 2019) as well as the differentiation between hard disclosure item (items which are difficult to replicate) and soft disclosure item (items which are general rhetoric and are easier to mimic) (Borghei et al., 2018). This will help to reduce a gap between the company's public image and its actual commitment to carbon reduction initiatives.

For the time being, there is no international accounting standard that requires the disclosure of GHG or carbon information (Borghei et al., 2018). Besides, there is no specified format and content of the information disclosure specified by regulatory authorities. Hence, giving companies incentive to manipulate information and use their own preferences to release information (Datt et al., 2019). As a result, big variation is observed in the quality of carbon information provided in annual reports across different geographies. The problem of content standardisation and uniformity has raised a need for further research to develop a suitable disclosure index that can be used to assess the quality of disclosure (Liao et al., 2014). There is a necessity of designing checklists of carbon disclosure items and indices beyond traditional measures which has predominantly focused on quality of total disclosure with little attention given to classification of hard and soft disclosure in order to capture more information attribute and exercise accountability by emphasising not only on symbolic disclosure but substantive disclosure. The study herein aims to propose a VCD index and examine the quality of the VCD of Malaysian companies, specifically companies operating in carbon-intensive industry.

2. Problem Statement

Albeit the growth and development of carbon reporting, there has been a recent dissatisfaction with the quality and level of trustworthiness of carbon information that companies convey in company annual reports (Baboukardos, 2017). As the provision of carbon information is made on a voluntary basis in most of the countries, there was no standardisation or uniformity in term of subject matter, quantity and type of information disclosed in the firms' annual report to shareholders. In addition, the criticism and scepticism on quality of carbon information disclosed mostly due to management discretion to selectively disclose mostly positive information to portray a good image (Talbot & Boiral, 2015). These problems create a need to construct a disclosure index that can be used to evaluate the quality of carbon information disclosure (Liao et al., 2014). Most importantly, in order to reduce a gap between the company's public image and its actual commitment to carbon reduction initiatives, it is pertinent to develop the disclosure index decomposes carbon disclosure into "hard disclosure" which are difficult to replicate and "soft disclosure" which are general rhetoric and are easier to mimic. While previous studies on VCR have employed quality-based measures of disclosure using total score, until recently, there is a dearth of research on using hard and soft disclosure.

3. Research Questions

What types of carbon disclosure did Malaysian companies operating in carbon-intensive industries provide in the 7-year period 2010 – 2016?

4. Purpose of the Study

The study aims to propose a VCD index and examine the quality of the VCD of Malaysian companies operating in carbon-intensive industry. In particular, this study aims to examine the types of disclosure provided by these companies to communicate their carbon related information.

4.1. Literature Review and Hypothesis Development

Legitimacy theory has traditionally been utilised to investigate the content and scope of VCD. From the view of legitimacy theory, companies will behave to stay legitimate in society's eyes (Ihlen, 2009). If their legitimacy is threatened, the companies may disclose preferred information to influence social perceptions and expectations of its environmental performance (Cho & Patten, 2007). For each company, however, the need for legitimacy is not the same, and disclosure is adjusted to the specific level of social pressure and the type of response required (Colaço & Simão, 2018). In order to close a legitimacy gap, companies have an incentive to use "substantive" or "symbolic" legitimacy strategies, or a mixture of both (O'Donovan, 2002). A carbon disclosure can be soft, that is, statements that can be easily mimicked and manipulated by companies or hard, that is, verifiable and forward-looking information (Clarkson et al., 2008).

Clarkson et al. (2008) were the first study to use hard and soft disclosure in relation to environmental information. The authors develop disclosure index consist of 95 items classify into hard and soft disclosures

and found that good environmental performing companies in the five most polluting industries in the US have a higher disclosure on items that are hard to imitate by poor environmental performing companies. Adopting the same disclosure index, Clarkson et al. (2011) analyses the environmental disclosure of Australian listed companies reported under Australia's National Pollutant Inventory and report that companies disclosed significantly less hard items than the soft one. The score suggests that their environmental reporting is more symbolic than substantive.

In a similar vein, Ahmad and Mohamad (2014), Plumlee et al. (2015) and Adinehzadeh, et al. (2018) also utilised Clarkson et al's (2008) disclosure index in their studies. Plumlee et al. (2015) reveal that US listed firms operated in oil and gas, chemical, food/beverage, pharmaceutical and electric utility industries provide more hard disclosure score than the soft disclosure score for the full sample and across industries. By contrast, Ahmad and Mohamad (2014) and Adinehzadeh et al. (2018) report that the tendency of Malaysian companies is to release more soft disclosure items as soft information are always general in nature and easy to mimic.

Ong, Trireksani and Djajadikerta (2016) continue Clarkson et al.'s (2008) effort by deconstructing a new scoring index for economic, social and environmental aspects of sustainability. In this setting, the author reveal that Australian firms provide more soft information than the hard ones with the mean scores 39 percent and 22 percent of their maximum scores, respectively. Using a combination of Clarkson et al.'s (2008) and Sutantoputra's (2009) index, Setyorini and Ishak (2012) examine the extent of corporate social and environmental disclosure of Indonesian companies. Similar to Adinehzadeh et al. (2018), the results revealed that the extent of the disclosure is dominated by soft disclosure. The authors argue that, in the context of their study, firms tend to employ similar disclosure mechanisms used by high performance companies to strive for their legitimacy. In the same area of interest, Yao and Li (2018) examine environmental disclosure of Chinese manufacturing firms and found that under the joint effect of geographical distance and peer imitation factors, managers are more likely to publish soft information particularly when the outside public pressure become significant.

Recent studies, Borghei et al. (2016) and Hollindale et al. (2017) echo the importance of classification of hard and soft disclosure from GHG information perspective. Using content analysis of 2009 and 2011 annual reports of non-GHG-registered Australian companies, Borghei et al. (2016) assess the nature of GHG disclosure and found that the proportion of reported disclosure was higher for hard disclosure category, which consist of about 60 percent of total GHG disclosure score in both years. The average level of hard disclosure in 2011 is increased significantly from disclosure in 2009. The finding suggests that the companies use more "behavioral management" approaches in preparing GHG disclosure and such disclosure reflects the instrumental solutions for GHG emissions reductions. Meanwhile Hollindale et al. (2017) has proven that annual reports and sustainability reports of 203 Australian companies contained more soft disclosure. The authors suggest that soft disclosures are unlikely to provide useful information to the users of an annual, integrated or sustainability report and indicate lower-quality reporting.

With the exceptions of Borghei et al. (2016) and Plumlee et al. (2015), this study adopts the above findings to develop the following propositions:

P1: Malaysian carbon intensive companies report more soft disclosure items than hard disclosure items

5. Research Methods

5.1. Data and sample

The population of this study is made up of all public listed on the Main board of Bursa Malaysia for the year 2016. This study uses purposive sampling by focusing merely on companies operating in carbon-intensive industries. The initial sample consisted of 1,806 firm-year observations. Of the 1,806 observations, 57 observations are dropped because of unavailable of annual report. The final sample consist 1,749 firm-year observations (241 firms in 2010, 245 firms in 2011, 250 firms in 2012, 252 firms in 2013, 253 firms in 2014, 252 firms in 2015, and 256 firms in 2016). The study used content analysis of VCD in annual reports of these companies from 2010 to 2016. The selection of annual reports as the unit of analysis due to its accessibility and widely recognised as having a disclosure function, in which it can serve as a crucial public relations function (Tsang, 2011). Most importantly, due to auditing verification and the structure of annual reports is formalised, thus a comparison with other annual reports in other companies can be made (Baroma, 2013). Annual reports of these companies were downloaded from the Bursa Malaysia's websites.

5.2. Measurement of VCD quality

A disclosure index is used to measure VCD quality. There are three general steps were involved in constructing the disclosure index (Hussainey, 2004). First step is developing the checklist by the selecting the preliminary list of disclosure topics and finalised the final list of disclosure topics. The selection process started with a compilation and review of a list of disclosure items that has been provided in the guidelines, standards, and reporting framework such as the National Corporate Greenhouse Gas (GHG) Reporting Programme for Malaysian (MYCarbon) (Ministry of Natural Resources and Environment (NRE) Malaysia, 2014), Global Reporting Initiative (GRI) Sustainability Reporting Guidelines (GRI, 2006), the Carbon Disclosure Project (CDP) Questionnaire Climate Change (CDP, 2016), Climate Disclosure Standards Board Reporting Framework (Climate Disclosure Standards Board, 2012) and Global framework for the climate change risk disclosure 2006 (United Nations Environment Programme – Finance Initiative, 2006).

To improve the validity of the instrument, this study also makes reference to other existing disclosure indices used in the previous studies. This study extends the disclosure index literature by incorporating basics principle of hard and soft disclosures used in Borghei et al.'s (2016), Clarkson et al.'s (2008) and Plumlee et al.'s (2015) reporting index to construct several sub-categories of the carbon disclosure index. As a result of this process, 44 items were included in the index, encapsulate of 31 items under hard disclosure categories and 13 items under soft disclosure categories. After identifying and selecting the final list of the disclosure index, the second step is to score the item and followed by computing the disclosure index (measuring the quality of disclosure). This study has adopted unweighted index approach to evaluate the disclosure quality since the adoption of either technique make no or little difference to the finding (Chithambo, 2013). All items are treated as equally important and 1 point will be awarded for each item with the maximum point of 44. The disclosure index for each company is then expressed as a percentage.

6. Findings

A new scoring index developed in this study consisted 44 items, encapsulate of 31 items under hard disclosure categories and 13 items under soft disclosure categories. There are four classifications of hard disclosures, namely, GHG emissions accounting, energy consumption accounting, GHG performance and serious actions to tackle emissions and four classifications of soft disclosure, namely, vision and strategy claims, target to tackle emissions, general actions and initiatives to tackle emissions and risks and opportunities.

Table 01 presents a descriptive statistic for total carbon disclosure quality (VCDQ), hard disclosure (VCHD) and soft disclosure (VCSD) of Malaysia companies operating in carbon-intensive industries from the year 2010 to 2016. Overall, 73 percent of the companies reported some form of carbon information in the annual report during the year of observation. The minimum VCDQ is zero for the pooled sample and the maximum VCDQ score for pooled sample is 52.27 percent. The mean of VCDQ scores constitutes 6.27 percent of the total maximum score of 44. As depicted in Table 01, the quality of VCD increased from the year 2010 to 2016. The result indicated that companies have made some progress to improve VCDQ over the sample period, evidenced by 56.62 percent increased from 2010 to 2016. Although the total VCDQ has improved each year, but the disclosure score is still low with the majority of the firm reported less than 50 percent of the total possible score. The finding is comparable to the results of a previous Malaysian study as reported by Ooi and Amran (2018) and Omar and Amran (2018). The low quality of disclosure among Malaysia companies may be due to the absence of a statutory requirement that require public listed companies to disclose carbon information to the public and the practices still very much in the early stages.

Table 01. Descriptive Statistic for Total, Hard and Soft Disclosure

	Minimum	Maximum	Mean	Std. Dev	Skewness	Kurtosis
VCDQ2010	0	41.8605	4.9843	6.2696	2.4767	11.6725
VCDQ2011	0	46.5116	5.4433	6.9618	2.5635	12.3860
VCDQ2012	0	51.1628	5.9776	7.0800	2.4762	12.6346
VCDQ2013	0	52.2727	6.2223	7.3401	2.7980	15.2385
VCDQ2014	0	40.9091	6.5945	7.1650	1.9751	8.1322
VCDQ2015	0	38.6364	6.7446	6.9524	1.9395	7.8694
VCDQ2016	0	47.7273	7.8005	8.6435	2.0485	7.5996
Pooled	0	52.2727	6.2677	7.2806	2.3350	10.6696
VCHD2010	0	38.7097	3.9629	5.7973	3.0828	15.9361
VCHD2011	0	41.9355	4.4613	6.4435	2.8805	14.3686
VCHD2012	0	53.3333	5.0185	6.7834	2.9864	16.3730
VCHD2013	0	48.3871	5.1860	6.8160	2.7540	14.0433
VCHD2014	0	41.9355	5.5072	6.8720	2.2284	9.4075
VCHD2015	0	48.3871	5.5594	6.8996	2.5562	12.1401
VCHD2016	0	46.6667	6.6549	8.6471	2.4224	9.6158
Pooled	0	53.3333	5.2073	6.9872	2.7155	12.9722
VCSD2010	0	61.5385	7.5008	9.4714	2.0202	9.5837
VCSD 2011	0	61.5385	7.8807	10.0181	1.7840	7.3561
VCSD 2012	0	46.1539	8.3077	9.9235	1.4140	4.9303
VCSD2013	0	69.2308	8.7302	10.8288	1.9576	8.8216

VCDQ2014	0	53.8462	9.1821	10.7866	1.4266	5.0684
VCDQ2015	0	46.1539	9.5238	9.9234	1.1235	4.1098
VCDQ2016	0	61.5385	10.5469	11.2945	1.4423	5.6188
Pooled	0	69.2308	8.8270	10.3752	1.5974	6.4398

In respect of hard disclosure (VCHD), the minimum score is zero for the pooled sample and the maximum score for pooled sample is 53.33 percent. The average VCHD value is 5.2073 over the seven years studied. The finding indicated that VCHD grew at only a moderate rate from 2010 to 2016 with the mean of disclosure score is 5.7973, 6.4435, 6.7834, 6.8160, 6.8720, 6.8996 and 8.6471 in the year 2010, 2011, 2012, 2013, 2014, 2015 and 2016 respectively. As indicated in Table 02, the finding denotes that firms disclosed a different level of quantitative and qualitative carbon information. Under hard disclosure, most of the companies report on qualitative carbon information. Of particular note, the highest disclosure was made in the “serious action to tackle emissions” category. The more in-depth analysis highlights most of the companies report on “energy conservation and efficiency”, “implementation of ISO 14001”, “redesigning products/process/services”, “the external engagements in activities to improve environmental practices” and “the existence of governance structure and management engagements”. The implementation of these actions suggests a company’s commitment to better control of carbon emissions. Only a few companies disclose quantitative information. Table 02 demonstrates the mean score for “GHG emissions accounting” is 0.2443 percent, ranked the second highest under hard category. The measurement of carbon emissions appears to be a completely new exercise among Malaysian companies. Thus, only few companies disclose its accounting system for “total GHG emissions in CO2 metric tonnes”, “total GHG emissions further subdivided by scope (Scope 1, Scope 2, Scope 3)”, “emissions data for each scope disaggregated by business units, facilities, sources or activity types” and “information on worldwide emissions”. However, none of the Malaysian companies report on “independence verification and assurance of GHG emissions information disclosed”. The absence of this key carbon related information casts doubts on the credibility of overall carbon disclosure.

In respect of “GHG performance” category, only 3.83 percent of the companies report on this category with the average score 0.1906 percent. Most of the companies report on “performance data is presented relative to previous periods and relative to targets”. The least information disclosed is “performance data are presented relative to peers/rivals or industry”. The only monetary disclosures are related to “other information on carbon reduction and cost”. While such information is deemed important to stakeholders, this result seems to indicate a lack of concern among Malaysian companies on this information. Hard disclosure category that are given the least attention is “energy consumption accounting”. The companies disclosed little about their “total electricity produced and consumed (in MWh)”, “percentage of total operation spend on energy” and the “total fuel (MWh/gigajoules) consumed”.

Table 02. Descriptive Statistic for Sub-Categories of the Hard and Soft Disclosure

Categories of disclosure	Mean	Maximum
Hard disclosure (CVHD)	5.2073	53.3330
GHG emission accounting	0.2443	19.3548
Energy consumption accounting	0.1531	10.0000
GHG performance	0.1906	13.3333

Serious actions to tackle emissions	4.6192	30.0000
Soft Disclosure (VCSD)	8.8270	69.2308
Vision and strategy claims	4.7148	23.0769
Target to tackle emissions	0.2155	23.0769
General actions and initiatives to tackle emissions	3.4085	23.0769
Risks and opportunities	0.4882	15.3846

Turning to soft disclosure (VCSD), on average, companies disclosed 8.83 percent with the minimum and maximum score of zero and 69.23 percent, respectively. Across the seven-year period of analysis, the mean VCSD score increased by 40.31 percent from 2010 to 2016 is reported. Consistent with Borghei et al. (2016) and Hollindale et al. (2017), “vision and strategy claim” is the highest proportion of soft carbon disclosure provided by Malaysian companies. Reporting on “a statements on the environmental compliance” was found to be the most reported “vision and strategy claim” theme followed by “a statement of emission policy, values and principles, codes of conduct” and “the existence of CEO/chairperson statement on GHG emissions”. “General actions and initiatives to tackle emissions” is in second-place of the highest score of soft disclosure categories. The most common disclosure under this theme was on “employee awareness, education and training”, “community, consumer and supplier awareness, education and training” and “research sponsorship and/or donation (non-monetary)”.

“Risks and opportunities” is the third highest soft disclosure with a 0.4882 percent disclosure score. The information disclosed under this category, including “the indication of how GHG emissions risk and opportunity are assessed and managed”, “the indication of current and future GHG emissions opportunities” and “the indication and description of the risks exposed”. Borghei et al. (2016) also report that “risks and opportunities” is not the most dominant field of GHG reporting. Consistent with Ooi and Amran (2018) and Omar and Amran (2018), information about risk and strategies to manage GHG emissions is very rare among Malaysian companies. The low score in this category may be due to substantial uncertainty surrounding the identification or quantification of these risks. Reporting on “target to tackle emissions” has the lowest mean scores. In line with Comyns and Figge (2015), reporting in this category was found to be poor with majority of firms failed to set “targets to reduce direct and indirect emissions” and “targets driven by external business”. In addition, it is not clear on “timescales over which the company aims to achieve the target”. In some cases, the information on “targets set using both absolute and intensity-based unit” is very minimal. Lack of information on target to tackle emissions portrays an underestimation of the importance of emissions reductions by Malaysian companies.

Based on Table 01, it shows that Malaysian companies prefer making soft disclosures. On average, companies disclosed 3.62 percent soft more than hard disclosure items. Though the highest score obtained for soft disclosures were not very high, but it is a much higher proportion compared to hard disclosures. The finding of the study, therefore, support P1.

Table 03. Mean Score for Hard and Soft Disclosure Items

Scores	Minimum	Maximum	Mean scores
Scores for VCHD	0.00000	53.33333	5.207277
Scores for VCSD	0.00000	69.23077	8.827022

As shown in Table 03, the finding echoes Ahmad and Mohamad's (2014) and Adinehzadeh et al's (2018) suggestion that Malaysian companies disclose basic, general and soft information. One potential reason for not providing high level of hard information in the annual report because the companies considered such information as immaterial or that there is a high degree of uncertainty surrounding the information. Based on the finding, it can be concluded that current VCD of Malaysian companies does not reflect its actual performance. The companies use more "symbolic management" approach in disclosing carbon information as a matter of reputation and image-building activity and do not provide stakeholders with a detailed understanding of carbon-related issues from a strategic perspective. The finding of the study support legitimacy theory in which the disclosure strategy of Malaysian companies is symbolic behavior which can be described as rhetorical statements to create an impression of environmental responsibility and discharge environmental accountability

7. Conclusion

This study assesses the quality of the VCD of Malaysian companies operating in carbon-intensive industry using new scoring index. Consistent with Ahmad and Mohamad (2014) and Adinehzadeh et al. (2018), the results of the study support the proposition that Malaysian companies disclosed more soft items compared to hard one in their annual reports. The result suggests that VCD are used as part of a legitimacy management exercise and as an impression management tool. One of the limitations of this study is that data collection is constricted to companies' annual reports. There is a likewise that carbon information is provided through alternative disclosure channels. Thus, it is probably inappropriate to generalise the findings to the voluntary carbon information disclosed in other communication channels such as sustainability reports and the disclosure in corporate websites. In addition, this study merely focuses on type of carbon disclosure. As carbon disclosure in Malaysia is still in its infancy, there is a need to understand the factors influencing the disclosure practices in the future.

Despite these limitations, this study makes a novel contribution to VCD literature by examining the type of information disclosed in developing country by construct a VCD index closely followed national as well as various international reporting guideline, standard and framework that best suited to be applied by Malaysian companies. This study addresses the necessity of designing checklists of carbon disclosure items and indices beyond traditional measures which has predominantly focused on quality of total disclosure with little attention given to classification of hard and soft disclosure in order to capture more information attribute and exercise accountability by emphasising not only on symbolic disclosure but substantive disclosure. The study also increases the understanding of current Malaysian VCD practice in which there is paucity of research in this area. The results of study reveal that the VCD quality remains low and the VCD practices of Malaysian companies at the moment seems to be more about symbolic than substantive, hence justify the intervention of government on corporate VCD and suggest that be necessary to have carbon disclosure regulated and independently assured.

Acknowledgments

We acknowledge the Universiti Tenaga Nasional support of the research fund (under Pocket Grant-RJO10436494/POCKET/201902) for this research.

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