

Media Report About Climate Change in an English Online Malaysian Newspaper Through Thematic and Discourse Analysis Approaches

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ABSTRACT

Climate change studies are mainly focused on disaster management and inundated with scientific jargons that the public could not fathom. Thus, the dissemination of climate change discourse to the public has been less effective due to lack of information and understanding which explains the lack of public engagement and participation. Studies on climate change that consider linguistics aspects are beginning to emerge, but are still lacking. Therefore, the present study intends to conduct a linguistic analysis by identifying themes in news on climate change and by analysing the extent of media propagation about climate change. 922 news articles from Malaysiakini were analysed using a corpus-driven approach through frequency and collocation analysis. This enabled us to identify themes on climate change. Discourse analysis was then conducted to find out about the linguistic manifestations of the identified themes. The findings reveal that governance is the most propagated theme, followed by mitigation and adaptation, contributor and impacts, and threats, which may polarise the public's understanding of climate change. Instead, the themes of contributors and impacts, and threats are those which should be put forward as they may provide facts on the causal relationship of climate change that may help in assisting the public in understanding what to do, what to avoid, and the consequences of not acting on climate change. An understanding of the temporal aspects of public involvement in engaging with climate change issues through thematic analysis could assist in identifying the types of public participation in this issue.

Keywords: climate change; corpus-driven approach; thematic analysis; discourse analysis; English online Malaysian newspapers

INTRODUCTION

Climate change is a very concerning issue that has been talked about for decades and is now affecting the globe even worse than before. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more as portrayed in the media. According to Flottum (2017), how people connect with climate change is closely related to how it is portrayed through language use. Thus, investigations of climate change communication cannot avoid attending to the role of language because language is essential in defining, thinking about, or in interpreting climate change. In fact, there has been a growing body of research into the language used to discuss environmental issues (Wild & McCarthy, 2010). For instance, the grammar analysis of texts on environmental issues has been examined to know if issues about global warming in US newspapers present climate change as causes of certainty or not (Koteyko & Atanasova, 2016), focusing on analysis of meaning of words and phrases such as vagueness in meaning (e.g., what do terms like "pollution" and "pest" mean to people), the use of different terms (e.g., using euphemism and wastewater for sewage), as summarised by Mühlhäusler (2001) [cited in Wild & McCarthy, 2010], and the growth of phrases with the word 'carbon', such as carbon footprint, carbon offset, carbon finance, carbon diet and carbon indulgence (Nerlich & Koteyko, 2009, in Wild & McCarthy, 2010).

The importance of public awareness and understanding of climate change is mostly played by the media or campaigns on climate change created by the governments and NGOs. This shows how media discourse about climate change discourse has contributed to the wider study of how climate change risks are constructed by stakeholders and the public, and how such constructions translate into individual or collective actions. Carvalho (2010) claims that media act as important agents in producing, reproducing, and transforming the meanings of particular social issues, while Newman et al. (2020) views discourse of climate change as a complex and unobtrusive issue. Sampei and Aoyagi-Usui (2009), meanwhile, opine that news can influence public concern about climate change when *levels of news media attention* to climate change is increased.

It is obvious that climate change is a "global crisis" (Cottle, 2009, p. 506). In line with this, Konieczna et al. (2014), Kunelius et al. (2017), and Olausson (2009) also assert that any coverage about climate change is characterized and dependent on the domestic and global perspectives on what causes climate change, who is affected, or how it can be addressed. Political or economic contexts such as climate actions, policies or vulnerabilities of the country to climate change may contribute to differences in the coverage of climate change in the media across countries (Barkemeyer et al., 2017; Schmidt et al., 2013; Vu et al., 2019). Furthermore, there could be "sudden, attention-grabbing events" (Birkland, 1998, p. 53) which direct public attention towards specific issues such as the disastrous effect of the unexpected massive flood that struck Selangor and Kuala Lumpur in early March 2022. Thus, public perception about climate change can be discerned through analysis of climate change discourse in the media, which the present study intends to do.

Tasha Erina et al.'s (2021a) study on the Malaysian public perception of climate change in the editorial section of a Malaysian newspaper using a sentiment analysis approach reported that although the public understands the basis of climate change, they are flustered with the current situation given that the people of the nation, as well as the decisionmakers in Malaysia, are less aggressive in addressing the issue. The recent massive flood which struck Selangor and Kuala Lumpur in early March 2022 and a landslide incident that killed three people have prompted the call from the public, for the government to be more aggressive and proactive in handling climate

change in Malaysia. A review of past studies on climate change in Malaysia revealed that the studies are scientific in nature, for instance, the effect of climate change on the seasonal monsoon rain (Loo et al., 2015), climate change impacts on small-scale fishermen (Shaffril et al., 2017), effect of climate change on cities (Rani et al., 2020), impacts of climate change on coastal communities, (Norzaida et al., 2017) and climate change and carbon emission (Abdul-Azeez, 2021). This study, therefore, is timely to understand how language is used to propagate climate change issues in Malaysia. This study intends to fulfil two objectives; (1) to identify themes on climate change news in newspapers and (2) to analyse the extent of media propagation about climate change. The present study can contribute to the emergence of public discourse and public sphere on climate change that can establish a structure that enables debate and opinion formation about climate change (Wozniak et al., 2021).

LANGUAGE, MEDIA AND CLIMATE CHANGE

Climate change impacts countries across the world in various ways that change temperatures, acidify the ocean or have detrimental effects on biodiversity (IPCC, 2014). Indirectly, the impacts contributed to societal implications, including shrinking habitable spaces, economic stress, or health threats (Dryzek et al., 2011), which revealed how complex climate change is because there is a chain reaction when climate change happens. As climate change has risen in salience, the public is much more likely to be exposed to news coverage about it now than in the past. Photiou et al. (2017) contend media is considered “a public sphere” through which individuals perceive social reality, and the media plays an active role in public agenda-setting, whilst Carvalho (2007), Ettema (2007) and Schäfer (2011) opine that media performs three key roles in a democratic society—information dissemination, holding power to account for institutions and people in power, and the ability to set an issue on the public agenda. This shows that although nowadays, information on any issue or topic can be easily obtained from social media, newspapers still play critical roles in shaping public opinion and in cultivating political consciousness since the news report may lead to policy-making, a change in public attitudes, and strengthen global cooperation (Murali et al., 2021; Boyko, 2009; Smith, 2000). Thus, the newspaper plays an influential role in shaping public attitudes on a wide range of issues. Carvalho (2010) contends that news media are a central arena for raising awareness about climate change, whilst Barkemeyer et al. (2017) argue that “climate change has emerged as a truly global problem that is not merely confined to affluent or well-educated regions...” (p. 1046). Therefore, journalists play an important role in portraying issues on climate change because how the news content is reported can emphasise the societal impact of climate change such as how humans are pervasively affected by climate change or how humans battle climate change (Painter & Schafer, 2018).

To reiterate, while climate change is seen as a complex issue, the way media talks about climate change is crucial as it may shape public opinion/perception about the issue (Bolsen et al., 2014; Druckman et al., 2013). Several scholars have examined how language is used in the media in disseminating climate change, and how climate change coverage is politicised (e.g. Chinn et al., 2020; Brüggemann, 2017; Brüggemann & Engesser, 2014). Chinn et al. (2020) assert that there is an increase in politicisation between 1985 and 2017 in the U.S. wherein mentions of political discourse exceed scientific discourse in climate change news. They also state that Republican mentions outnumber Democratic mentions which results in a greater polarisation in climate change coverage. Weiner et al. (2021) examined linguistic markers such as proximity cues, which indicate temporal or spatial distance, in climate change news dissemination in six U.S newspapers. The results show that although proximity cues were seldom used in those newspapers, proximal cues

(both temporal and spatial) were used more commonly than distal cues. Murali et al. (2021) employed discourse analysis approach to examine narratives on climate change existence and who bears responsibility for greenhouse gas emissions on random selection of 50 newspaper articles from Nigeria, Australia and the U.S. Media narratives in every country reported different level of responsibility on climate change, hence, the researchers concluded that disparate messages were portrayed around the responsibility for climate change emissions. Nevertheless, every country acknowledged the urgency of responding to climate change with words such as “crises”, “emergency” or “urgent” that appeared frequently in the media report.

Where research in the Malaysian context is concerned, several studies, although very limited, have looked into the media portrayal of climate change. Nor Jijidiana et al. (2015), who employed a content analysis on four Malaysian newspapers between 2008 and 2010, assert that mostly, the surge of news coverage on climate change in the media is influenced by global climate change events. Han et al. (2017)’s study on the framing of five Malaysian mainstream Chinese newspapers using content analysis, identified six frames that are highlighted in those newspapers which are conflict, collaboration, human interest, attribution of responsibility, environmental and human impact, and leadership. Despite the aforementioned Malaysian studies, the researchers of this present study have yet to acknowledge any other study on media propagation of climate change from the linguistic perspective. Therefore, this study is timely to understand the language manifestation of the said climate change propagation.

METHODOLOGY

To recapitulate, this study employed a corpus-driven approach, using collocation analysis, to identify collocates of the node word “*climate change*” which subsequently assisted the thematic analysis. Then, a thematic analysis was done manually based on Braun and Clarke’s (2006) six phases of thematic analysis to identify themes on climate change news. Finally, discourse analysis was conducted to understand the context and linguistic manifestations of the concordances. A detailed explanation of the study method follows.

THE CORPUS

This study utilised a corpus-driven approach. Data for this study comprised a collection of online newspaper articles on climate change from Malaysiakini (<https://www.malaysiakini.com>). Newspaper was chosen because it is the primary means of disseminating information and awareness-raising in most places (Schmidht et al., 2013). Additionally, Malaysiakini was chosen as it is listed as the number one online newspaper brand with the highest weekly reach in Malaysia, according to Reuters Institute Digital News Report 2021 (Nain, 2021).

When collecting the news articles, “*climate change Malaysia*” was used as the search term as it provides an explicit focused reference. Other search terms such as “*natural disaster*”, “*global warming*”, etc were not included to provide a focused scope of the data and to avoid excessive repetitive news articles. The search term used was also suitable for this study as the researchers intend to only examine the collocates of the node word “*climate change*”. As a result, 922 articles on climate change were collected from the year 2015 until 2021. 2015 was chosen as the starting period of the targeted data because the Paris Agreement, an international treaty on climate change, started to be adopted by parties of the UN Framework Convention on Climate Change (UNFCCC), including Malaysia (United Nations Climate Change, n.d.) in 2015, whilst 2021 was chosen

because it marked several climate change events such as the unprecedented heat waves in North America and southeastern Europe (Lai, 2021) as well as major flash floods in Malaysia (Cameons, 2021).

Thus, the collected news articles developed a specialised corpus namely the Malaysian Climate Change Corpus (MyCCC). The corpus of this study consisted of a total of 27,099-word types and 804,289-word tokens. Detailed information on the subcorpora is stated in table 1.

TABLE 1. Description of Malaysiakini's 2015-2021 subcorpora

Description/ Subcorpora	Malaysia -kini 2015	Malaysia- kini 2016	Malaysia- kini 2017	Malaysia- kini 2018	Malaysia- kini 2019	Malaysia- kini 2020	Malaysia- kini 2021
No. of News Articles	85	112	96	113	280	118	118
Types	7,897	10,687	9,794	9,514	13,755	11,311	10,662
Tokens	72,025	102,264	85,793	93,852	209,966	134,533	105,856
Type Token Ratios	0.110	0.105	0.114	0.101	0.066	0.084	0.101
Raw Frequency (Node word: "climate change")	166	113	81	139	380	216	250
Normalised Frequency (Node word: "climate change")	2.305	1.105	0.944	1.481	1.810	1.606	2.362

RESEARCH PROCEDURE

During the data collection process, the news articles were converted into plain text (txt.) format to ensure data readability on the corpus tool utilised in this study, *AntConc 4.0.5*. AntConc is a freeware, cross-platform and multi-purpose corpus analysis tool that includes a powerful concordancer, word and keyword frequency generators, tools for cluster and lexical bundle analysis, and a word distribution plot (Anthony, 2004). Next, duplicated news articles were removed by a third-party software called Ashisoft (<https://www.ashisoft.com/>), and unwanted noise such as advertisements and other marketing materials were cleaned and extracted out from the data, to ensure data's relevancy. A tagging process was then performed through *Tagant 1.3.0*, wherein each word/token was tagged with its parts of speech (POS) such as noun, verb, adjective, etc. Stop words such as *the*, *is*, and *are* were removed from the corpus to ensure that only content words remained. Stop words are words that are excluded from a text for text processing because they comprised little semantic significance (Raulji & Saini, 2017).

Subsequently, the corpus was then inserted into *AntConc 4.0.5* and the wordlist tool was employed to obtain the corpus' wordlist and word frequency. Next, the collocate tool was utilised to start the collocation analysis on the collocates of the node word "climate change". During the analysis, two parameters were taken into consideration; statistical significance/log-likelihood (LL) and substantive significance/effect size (in Mutual Information (MI)). Both parameters are important because LL illustrates that the results are likely to be due to chance, whereas the effect size helps to understand the magnitude of differences found (Sullivan & Feinn, 2012). The threshold of LL is set as $p < 0.05$ (3.84 with Bonferroni) which means that the probability of the results happening by chance is less than 5% (Lancaster, n.d.). The effect size measure was set at the minimum threshold of three, following Hunston's (2002) suggestion, indicating a 'strong' collocate. Additionally, the minimum total frequency count of the collocate was set to four and above to ensure reliability.

Upon getting the list of collocates, the researchers extracted noun collocates to be further examined since the majority of the most statistically significant collocates comprises noun as compared to the other POS. Next, the collocates were used to identify themes of the news through a thematic analysis. The collocates were categorised into several themes based on Braun and Clarke’s (2006) six phases of thematic analysis which include 1) familiarising with data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the report. Table 2 shows the thematic analysis phases and descriptions as described by Braun and Clarke (2006), along with an example of how thematic analysis was conducted using the corpus in this study.

TABLE 2. Example of thematic analysis steps using the corpus

Phases	Thematic Analysis	Description (Braun & Clarke, 2006)	Example (Concordance of the collocate <i>causes</i>)
1	Familiarising with data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.	<p>Concordance: ...arising from the deforestation and forest degradation, which are major causes of climate change. On the other hand, the traditional...</p> <p>Full context: These are taking place in spite of the serious problem of <u>global carbon emission</u> (around 20 percent of the total) arising from the <u>deforestation and forest degradation</u>, which are <u>major causes of climate change</u>. On the other hand, the traditional livelihoods of indigenous peoples such as shifting cultivation/rotational agriculture, gathering of non-timber forest products and hunting are being blamed as serious causes of deforestation and forest degradation.</p> <p>Initial ideas: Deforestation and forest degradation produced global carbon emission. Deforestation and forest degradation are major causes of climate change.</p>
2	Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.	<p>Deforestation and forest degradation – Produced global carbon emission and are major causes of climate change</p> <p>C1 Causes of climate change</p>
3	Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.	<p>Deforestation and forest degradation - major causes of climate change</p> <p>Theme: Deforestation and forest degradation causes climate change</p>
4	Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic ‘map’ of the analysis.	<p>Theme: Causes of/ contributor to climate change</p>
5	Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells,	<p>Theme: Contributor (to climate change)</p>

		generating clear definitions and names for each theme.	
6	Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.	<i>Writing of report in journal article</i>

To assist the second step of the thematic analysis, the researchers adapted the coding proposed by Billet (2010) for his study of the Indian newspaper coverage of climate change. Billet conducted a scientifically systematic process, as described in his research, in developing the code. Billet's (2010) coding scheme aided this current study in developing the coding structure that is suitable for climate change news analysis and also assisted the researchers in identifying and determining the characteristics that may be considered and coded when looking at climate change themes. New codes were also generated when the identified theme did not fit in with Billet's coding scheme. The contexts were coded according to the themes' initials which refer to the themes such as; G (*governance*), IT (*impacts and threats*), MA (*mitigation and adaptation*), and C (*contributor*), along with numbers (e.g., 1, 2, 3, 4) which indicate the subcategories of themes (e.g., subcategory 1 under *governance* theme which refers to *policies that are mandated in response to climate change*, is indicated as G1). Finally, discourse analysis was conducted to understand the context and linguistic manifestations of the concordances.

RESULTS

This section presents the results in two main parts. The first section describes the findings for collocation analysis and the second section presents the results for thematic and discourse analysis.

COLLOCATION NETWORK OF CLIMATE CHANGE

Collocation analysis, which identifies collocates and phrases around significant words, is useful because the presence of recurring patterns can identify specific indicators established around words that are immediately adjacent to one another (Baker et al., 2013). Collocation is defined as a word that frequently appears next to another word – which some researchers define narrowly as two words co-occurring in high frequency (Rogers et al., 2021).

As mentioned earlier, this study only focused on noun collocates of the node word “*climate change*”. As a result, 37 noun collocates were obtained based on the parameters that were mentioned earlier (see research procedure).

TABLE 3. 20 most statistically significant noun collocates of “climate change”

No.	Collocate	POS	Total Frequency	Likelihood	Effect
1	intergovernmental	NP	23	149.741	6.047
2	panel	NP	22	143.142	6.044
3	technology	NP	227	1413.11	5.837
4	bee	NP	120	698.359	5.555
5	framework	NP	30	173.026	5.523
6	environment	NP	226	1243.913	5.325
7	yin	NP	97	523.822	5.257
8	mestecc	NP	34	181.635	5.218
9	ecccc	NP	5	25.938	5.108
10	ipcc	NP	12	61.281	5.049
11	unfccc	NP	14	69.801	4.961
12	isnaraissah	NP	10	48.262	4.845
13	adaptation	NP	5	24.129	4.845
14	convention	NP	30	142.416	4.786
15	yeo	NP	123	569.109	4.693
16	warfare	NN	4	18.233	4.649
17	cop26	NP	4	18.233	4.649
18	conference	NP	17	73.975	4.495
19	contributors	NNS	4	16.932	4.408
20	joint	NP	4	16.932	4.408

Table 3 presents 20 most statistically significant noun collocates of “climate change” which is sorted by the effect size measure. As tagged in *TagAnt 1.3.0*, the POS listed in the noun collocates list is divided into several subcategories; 1) NN: Noun, singular or mass, 2) NNS: Noun plural, 3) NP: Proper noun, singular, and 4) NPS: Proper noun, plural. As seen in table 3, the most statistically significant collocate of “climate change” is *intergovernmental*. This means that this collocate has the strongest relationship with the targeted node word in which it attains the LL score of 149.741 and effect size of 6.047 (see table 3).

Intergovernmental stands as a proper noun and a multiword unit (MWU) or more specifically, a lexical bundle. Lexical bundle is a type of multiword unit that comprise three or more words used with high frequency in natural discourse (Nasrabady et al., 2020). In this case, the word *intergovernmental* is seen to co-occur with the collocates *panel*, *on*, *climate*, *change* and *ipcc* which refers to the Intergovernmental Panel on Climate Change (IPCC). Hence, this also explains the significance of *panel* and *ipcc* in the collocate list. IPCC is the United Nations body that assesses the science related to climate change and provides climate change reports to governments around the world (IPCC, n.d.).

Similarly, other MWUs are observed in the list such as *framework*, *convention* and *unfccc* which represents the United Nations Framework Convention on Climate Change (UNFCCC) as well as *environment*, *technology* and *mestecc* which indicates the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC). UNFCCC is a body that establishes the fundamental legal framework and principles governing international climate change

cooperation (Earth Negotiations Bulletin, n.d.), while MESTECC is a Malaysian ministry that is responsible in combating climate change.

Another MWU that occurs in the list is Yeo Bee Yin, the minister of MESTECC, which comprise collocates of *yeo*, *bee* and *yin*. Correspondingly, the collocate *isnaraissah* refers to the deputy minister of MESTECC. Thus far, it can be observed that there is a great multitude of climate change authoritative parties being mentioned in the corpus which include the IPCC, UNFCCC, MESTECC, Yeo Bee Yin, and Isnaraissah. This is also similar to several other collocates which are *eccc* which refers to the Bar Council’s Environment and Climate Change Committee (ECCC), and *joint* which indicates the Joint Committee on Climate Change (JC3).

Furthermore, the collocate *conference* and *cop26* are also seen to highlight governance and authoritativeness surrounding climate change where various conferences are being held to discuss climate change issues and policy implementations at various levels. Some of the conferences referred to the United Nations Climate Change Conference series (COP26 and COP21) and the Paris Climate Change Conference. Climate change adaptation measures (e.g., the need to implement Climate Change Master Plan, the augmentation of climate change adaptation and disaster risk management, etc) also occurred in the corpus which refer to the collocate *adaptation*. Additionally, contributing factors to climate change are also pointed out through collocates of *contributors* (e.g., activities made by developed countries, dairy industry, etc) and *warfare* (*nuclear warfare*).

RESULTS ON THEMES AND DISCOURSE ANALYSIS OF CLIMATE CHANGE NEWS

As mentioned, the thematic analysis employed in this study is based on Braun and Clarke's (2006) six phases of thematic analysis to identify, analyse and report patterns found in the data. This study categorised collocates associated with the node word "*climate change*" to identify the themes. Furthermore, the coding used in this study is adapted from Billet’s (2010) study on Indian newspaper coverage of climate change which also assisted in developing new code identified in the data, as described in the methodology section. To reiterate, apart from adopting Braun and Clarke’s (2006) thematic analysis steps and adapting Billet’s (2010) coding scheme on climate change news (which has been tested for reliability and validity, with returning coefficients of 0.812 and 0.919), a thorough discussion among the researchers of this present study was also conducted. Table 4 describes the coding used in this study in identifying the themes. Table 5 presents the identified themes, whilst figure 1 shows the visual representation of themes on climate change news distribution.

TABLE 4. Coding for themes on climate change news

Theme	Code
Governance	G1 Policies that are mandated in response to climate change
	G2 Acknowledgement of climate change by Malaysia's government
	G3 Acknowledgement of climate change by international governance
	G4 Reports of Malaysia's government regarding climate change
	G5 Environmental treaty of climate change
	G6 Environmental treaty reports on climate change
	G7 Political inclination concerning climate change

Impacts and threats	IT1 Impacts of climate change in general IT2 Impacts of climate change in Malaysia IT3 Impacts of climate change globally IT4 Entities that are threatened by climate change
Mitigation and adaptation	MA1 Efforts and actions that are taken to mitigate and adapt to climate change MA2 Efforts to raise awareness in response to climate change mitigation and adaptation MA3 Mitigation approaches that are available to be implemented
Contributor	C1 Causes of climate change C2 Inefficiency of mitigation and adaptation efforts to climate change C3 Failure to implement climate change and mitigation efforts C4 Failure to comply with climate change policies

TABLE 5. Identified themes and noun collocates in climate change news

Theme	Noun collocates	Total no. of noun collocates
Governance	intergovernmental, panel, technology, bee, framework, environment, yin, mestecc, eccc, ipcc, unfccc, isnaraisah, adaptation, convention, yeo, cop26, conference, joint, warming, munirah, adaptation, nations, ministry, bar, mitigation, causes, paris, un, minister, science, resilience	31
Impacts and threats	intergovernmental, panel, effects, impacts, warming	5
Mitigation and adaptation	intergovernmental, panel, technology, bee, framework, environment, yin, mestecc, adaptation, convention, yeo, conference, joint, effects, warming, munirah, adaptation, nations, ministry, causes, paris, un, minister, science, resilience	25
Contributor	technology, bee, framework, environment, yin, convention, yeo, warfare, contributors, effects, impacts, warming, bar, mitigation, causes, minister, science	17

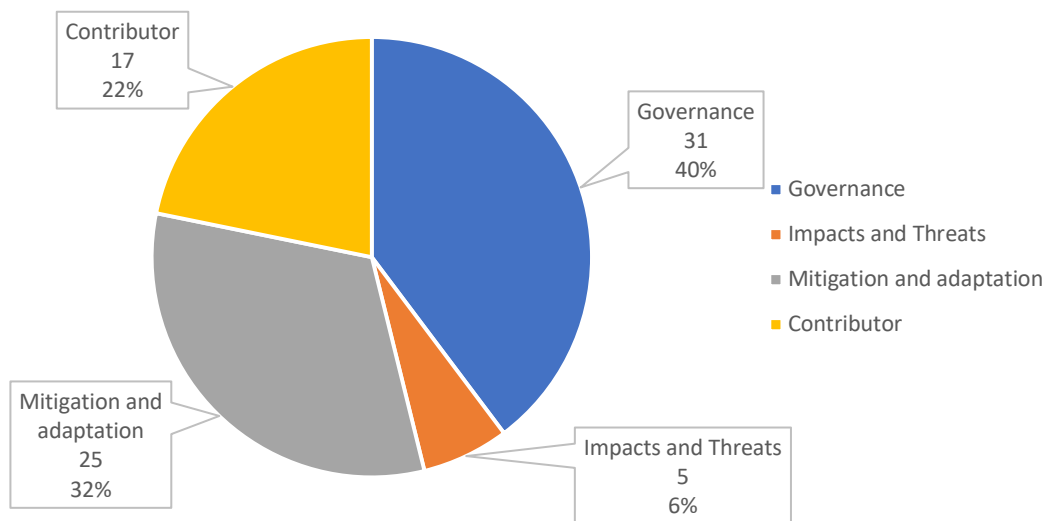


FIGURE 1. Distribution of themes in climate change news

A collocate may produce a set of concordance lines that contain various contexts. Hence, for the thematic analysis, a collocate may be assigned to several different themes depending on its contexts. For instance, as stated in table 5, the collocate *intergovernmental* is assigned to three different themes; *governance*, *impacts and threats*, and *mitigation and adaptation*. Where the distribution of themes is concerned, figure 1 shows the collocates accumulated for each theme and their percentages which are useful in visualising the theme's dominance and aids the study's discussion.

The following section describes the representations of the themes found from the thematic analysis, accompanied by discourse analysis of each theme. The explanation is categorised into four subsections according to the themes; *governance*, *impacts and threats*, *mitigation and adaptation*, and *contributors*. To avoid a lengthy explanation, each theme is explained with an example of concordance/context of the corpus. An overview discussion of the thematic and discourse analysis is in the discussion section that follows.

GOVERNANCE THEME

The theme categorisation reveals that the theme *governance* attains the highest total number of collocates, which means that the climate change propagation by the media is immensely inclined towards governing and ruling of climate change with a percentage of 40%. Referring to the codes applied for *governance* theme in table 4, the theme involves largely on governing and ruling of climate change from various levels including the local government, international governance, etc. The *governance* theme has a total of 31 collocates such as *intergovernmental*, *panel*, *technology*, and more (see table 5). The excerpt in example 1 illustrates the context of the collocate *mestecc* under the *governance* theme.

Example 1: *Earlier today, Entrepreneur Development Minister Mohd Redzuan Yusof further waded into his cabinet colleague Yeo Bee Yin 's portfolio at the Energy, Science, Technology, Environment and Climate Change Ministry (MESTECC), claiming her position on Australian rare-earth mining company Lynas was not endorsed by the cabinet.*

The collocate for this context is coded as G7 (political inclination concerning climate change). Based on the context, there is a clash in climate change mitigation interests and decisions between ministers in Malaysia, regarding the issue of Lynas. Lynas operates the world's largest single rare earth processing plant, producing rare earth materials for export to manufacturing markets in Asia, Europe and the U.S. The company has been found producing elevated levels of heavy metals in the groundwater around their plant. Thus, some parties perceive Lynas as an entity that threatens climate change in Malaysia, while others see it as a medium to attract foreign direct investment. Hence, the decision about Lynas' operation in the country is highly controversial and very much debatable which mostly involves the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC). This explains why the collocate *Mestecc* falls under the *governance* theme.

IMPACTS AND THREATS THEME

The *impacts and threats* theme obtains the lowest collocates count with only 5 collocates. This portrays that the propagation of the effects of climate change and climate change hazards are among the lowest (6%) issues as compared to the other three themes (*governance, mitigation and adaptation, and contributors*). The codes for *impacts and threats* theme refers to the impacts of climate change in general; locally and globally. Some of the collocates that fall under this theme are *intergovernmental, panel* and *effects*. Example 2 presents the excerpt of the collocate *effects*.

Example 2: *To compound this, it has been estimated that paddy yields in Malaysia will fall by 12 percent during main seasons between 2013 and 2030, and by over 31 percent during off-seasons, as the **effects** of climate change begin to be felt.*

The excerpt in example 2 describes the paddy industry that is widely affected by climate change. The collocate *effects* refers to code IT4 (entities that are threatened by climate change). Climate change has affected the production of various sources including rice which is Malaysia's primary staple food. R. B. Radin (2020) states that the impacts of climate change exacerbate challenges in increasing paddy yields which subsequently threaten Malaysia's goal of achieving food security. In fact, one news article pointed out that in early 2020, the farmers experience prolonged drought and with the existence of climate change, such droughts are expected to be more frequent and prolonged.

MITIGATION AND ADAPTATION THEME

The theme of *mitigation and adaptation* falls second (32%) and attains a total of 25 collocates (e.g., *conference, joint, convention*), which is relatively high. This means that the media regularly conveys the issues of climate change alleviation and adjustment, which mainly consist of the efforts to raise awareness on mitigation and adaptation strategies, the implemented efforts and actions of climate change mitigation and adaptation, as well as suggestions for mitigation and adaptation approaches. Example 3 presents the excerpt of the collocate *adaptation* which falls under the *mitigation and adaptation* theme.

Example 3: *Pessimism involves preparing **adaptation** measures to protect the most vulnerable at home in the event that climate targets are missed, as well as from irreversible changes set in motion, such as sea-level rise.*

The collocate *adaptation* for the context in example 3 is coded as MA2 (efforts to raise awareness in response to climate change mitigation and adaptation). The extracted context is from an editorial/opinion section of the newspaper. The author urges the readers/public to embrace pessimism in ameliorating climate change. This act is observed as an awareness-raising effort that seeks to inform and educate the public regarding climate change issues with the intention of influencing their attitudes. Through our observation from the corpus, this type of voice is frequently seen mostly in the editorial section written by the public which explains that there is a relatively high acknowledgement of the current condition of climate change amongst the public.

CONTRIBUTOR THEME

As stated in Table 4, the theme *contributor* revolves around issues of causes (human activities and naturally driven) of climate change, inefficiency in climate change mitigation and adaptation efforts, failure to implement climate change mitigation and adaptation efforts, as well as failure to comply with established climate change policies. The theme *contributor* obtains 17 collocates (22%) such as *technology, bee, framework, environment, yin*, etc. This means that this theme is propagated merely on a satisfactory level by the media. Example 4 presents the excerpt collocate *causes* which falls under the *contributor* theme.

Example 4: *These are taking place in spite of the serious problem of global carbon emission (around 20 percent of the total) arising from the deforestation and forest degradation, which are major **causes** of climate change.*

The collocate *causes* in example 4 is coded as C1 (causes of climate change) as the context mentions the contributing factors to climate change. As seen in example 4, the author asserts that deforestation and forest degradation cause global carbon emissions, thus, contributing to climate change. Besides deforestation and forest degradation, rampant logging is also repeatedly mentioned in the corpus. These human-induced causes of climate change are indeed worrying and they may disrupt the planet in the near future, if no action is taken.

DISCUSSION

Generally, it can be seen that the media in Malaysia, specifically Malaysiakini, frequently reports news on climate change issues. This can be observed through the number of articles published by Malaysiakini for the span of seven years (2015-2021) which reached 922 articles. This also means that on average, the portal published about 132 news articles on climate change, per year. However, it is interesting to see the pattern of their yearly coverage of climate change news which appears to be inconsistent. The trend of their news coverage presents a rise and fall pattern in terms of the number of published news articles for several years (see table 1). This pattern echoes Konieczna et al. (2014), Kunelius et al. (2017) and Olausson (2009) who assert that coverage about climate change is dependent on the domestic and global perspectives on what causes climate change, who is affected, or how it can be addressed.

The spike in news reports on climate change in 2019 grabs the interest of the researchers to conduct a closer examination. It shows that the rise in the newspaper coverage may be due to the new implementation of the climate change portfolio by Malaysia's government which aligned the mentioned portfolio under MESTECC in 2018. Varkkey (2019) asserts that it was the first time that climate change has been formally incorporated into a Malaysian ministerial portfolio. Hence, the government made a slew of new climate-related commitment pledges and statements such as the launch of The Green Technology Financing Scheme 2.0 (GTFS 2.0). The pledges and statements triggered the contribution of the news spike in 2019. Another factor that contributed to the increase may be attributed to the event of the United Nations Climate Change Conference 2019 (COP25) that happened in the same year. These circumstances support the findings from previous studies which state that the media coverage of certain issues such as climate change correlates with major and significant events related to the issue (Birkland, 1998; Nor Jijidiana et al., 2015).

The themes of climate change news portrayed in Malaysiakini revealed that-Malaysiakini propagates more towards the *governance* (40%) theme which is then followed by *mitigation and adaptation* (32%), *contributor* (22%) and *impacts and threats* (6%) themes, respectively. As mentioned, the *governance* theme revolves around issues of governing and ruling of climate change which involves a lot of politicization, specifically political partisanship. Previous studies assert that politicisation in climate change news tends to influence public opinion about climate change to be polarised (Wiest et al. 2015; Stecula & Merkley, 2019; Chinn et al., 2020). The *governance* appeared to have plenty of politicised news articles, hence, the researchers opine that there may be biasness of news reports in propagating climate change. As suggested by previous researches, the politicisation of coverage of environmental issues is encouraged by journalistic biases (Boykoff, 2011; Boykoff & Luedecke; 2016; Painter & Schafer, 2018) which is unnecessary in conveying a critical issue like climate change. Apart from that, we opine that the broad propagation of the *governance* theme is less impactful in getting the attention of the public to be aware of the real climate situation, whilst excluding them from improving the dire situation of climate change.

Nonetheless, the *mitigation and adaptation* theme is also portrayed by the media which is seen as a positive journalistic approach since mitigation and adaptation actions of climate change are required to be taken every day (Hart & Feldman, 2016; Cheong Jun & Hasmah, 2018), especially from the public, to expedite the reduction of climate change effects. However, there is less propagation for the theme on the causes and effects (*contributors* and *impacts and threats* themes). This is a concern since the public need to be made more aware of this theme in order to get them to play a more active role in curbing the impacts and threats of climate change in Malaysia.

CONCLUSION

Overcoming the issue of climate change necessitates efforts at multiple levels. Although decision-makers are typically on the front lines in dealing with critical national and global problems, the mitigation of climate change requires the involvement of the public. The public's involvement in addressing this issue has the potential to have a huge positive impact to bring a collective effort and effective movement on the issue. However, for the public to act positively on an issue, they must first receive accurate information from reliable sources such as the media. In many parts of the world, including Malaysia, the media serves as the primary source of information on critical issues such as climate change for the public (Hase et al. 2021; Stecula & Merkley 2019). Hence, the media undoubtedly plays an important role in influencing public opinions on such issues (Cheong Jun & Hasmah, 2018).

Thus, we conclude that although Malaysiakini discusses widely on climate change, its coverage seems to be inconsistent which may be due to the dependability on major and significant events. Apart from that, the propagation of the said issue is inclined towards the *governance* theme which the researchers perceive to be less stimulating and impotent for the public to grasp as it involves much politicisation, instead of facts about climate change. This may influence the public's exclusion from practising the appropriate measures of ameliorating climate change (Tasha Erina et al., 2021b). Although the media relatively conveys much about the *mitigation and adaptation* theme, it is useful to complement such theme by increasing the propagation of the causes and effects of climate change that represents *impacts and threats*, and *contributors* themes. We,

therefore, suggest that these issues/themes should be put forward more aggressively, to rationalise climate change mitigation and adaptation efforts presented by the media. The public needs to understand why they have to make such efforts, what are the consequences if they do not act on it, and what should be avoided so that they do not exacerbate climate change impacts. Additionally, to provide a good overview of climate change to the public, the media should disseminate news on climate change's causal relationship between the earth's spheres or subsystems, namely the atmosphere (air), lithosphere (land), hydrosphere (water) and biosphere (lives on earth), which often occurs as a series of chain reactions (Billet et al., 2010; Liu et al., 2008; Hart & Feldman, 2014). For instance, the media may explain how extreme weather events such as droughts and windstorms can turn the public into climate refugees when those disasters threaten their food security and other basic needs (Ida, 2021). Consequently, this may help the public to lay hold of the proper foundation and notion of climate change situations.

The study has its limitations. Firstly, only one newspaper was used as the source of data collection and the data used was only within seven years due to time constraints. Thus, future researchers are suggested to increase the number of newspapers and the duration of data collection to produce more comparable and extensive results. A comparative study between different news sources can also be conducted to investigate the diversity of climate change coverage. Despite its limitations, the current study has contributed to the literature and research on media propagation of climate change in the Malaysian context, as the review of the literature revealed lack of studies focusing on the national's English newspaper within a time frame of more than five years.

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