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Behind the Concept of 'Zero Carbon Emissions' in Indonesia: A Symbolic Construction Analysis

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Abstract

As one of the world's largest contributors to greenhouse gas emissions, Indonesia has set a target for zero carbon emissions by 2060. However, these targets and the derived efforts have not been accompanied by adequate understanding among the Indonesian populace. This research aims to comprehend and analyze the concept of zero carbon emissions in Indonesia. Employing a qualitative approach with content analysis methodology, the study discovered that one of the causes for this lack of understanding is the ineffective messaging concerning 'zero carbon emissions' in Indonesia. The symbolic constructs created do not align with the intended messages, in line with the recommendations for effective environmental communication concepts, encompassing aspects such as message types, functions, word choices, genres, relevance, and consistency. This research implies an enhancement in public awareness regarding the concept of zero carbon emissions in Indonesia. The outcomes of this study can also provide insights to the government and environmental organizations to formulate more effective policies in communicating the message of 'zero carbon emissions.' By implementing these recommendations, environmental communication regarding the concept of zero carbon emissions in Indonesia can become more effective, motivating individuals to actively participate in efforts to reduce carbon emissions.

Introduction

Over the centuries, the economic sector has successfully developed into one of the main pillars for humans to achieve prosperity. Activities in this sector continue to evolve – from just using simple tools, accelerating productivity with steam engines, increasing efficiency with electrification and electronicization, automating with technology, to optimizing strategies with artificial intelligence. However, consciously or unconsciously, all these activities produce exhaust emissions, categorized as Greenhouse Gases (GHGs). This phenomenon results in climate change, which is detrimental and sacrifices the environment and endangers future generations (Gunawan, 2022).

As the country with the fourth largest population in the world, Indonesia is also one of the carbon emitters or countries that produce the largest GHG emissions (Kaneko & Kawanishi, 2016). Based on the GHG Inventory and Monitoring, Reporting, Verification (MPV) Report issued by the Ministry of Environment and Forestry (KLHK) in 2021, Indonesia produced around 1.86 billion tons of carbon dioxide equivalent (CO2e) GHG emissions in 2019, where emissions most of it came from the energy sector with a total of 638.8 million tons of CO2e. Cumulatively, national GHG emissions have increased significantly compared to 2010 which was at 809.9 million tons of CO2e (Ahdiat, 2022).

Indonesia has also tried to demonstrate its commitment to reducing GHG emissions since the enactment of the Kyoto Protocol, a legally binding commitment to reduce GHG and carbon dioxide (CO2) globally (VKM Putri, 2022), which was then followed by the Paris Agreement,

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a proof of international agreement that focuses on overcoming global climate problems (BTA & VKM Putri, 2022). This commitment is further outlined in an emissions reduction program known as Net Zero Emissions (NZE) or zero carbon emissions, where the Indonesian Government targets to reduce carbon emissions by 29% by 2030 (Anggela, 2022) and achieve zero carbon emissions by 2060 (Indrani, 2022).

Quoting the official website of the Ministry of Energy and Mineral Resources, zero carbon emissions is a condition where the amount of carbon emissions released into the atmosphere does not exceed the amount of emissions that the earth can absorb. In other words, zero carbon emissions is not a manifestation of a world without emissions but rather an effort to balance remaining GHG emissions with other actions.

In order to achieve the targets that have been set, the Indonesian government has prepared several regulations and concrete work actions. Some of these include issuing Presidential Decree 61/2011 concerning 'National Action Plan for Reducing Greenhouse Gas Emissions,' Presidential Decree 71/2011 concerning 'Implementation of National Greenhouse Gas Inventory,' and most recently, Presidential Decree 98 of 2021 concerning 'Implementation of the Economic Value of Carbon for Achieving Nationally Determined Contribution Targets and Controlling Greenhouse Gas Emissions in National Development.' Not only that, the government also appointed seven Ministries to specifically formulate a road map for achieving the zero carbon emissions target. The seven Ministries are Bappenas, KLHK, Ministry of Energy and Mineral Resources, Ministry of Transportation, Ministry of Industry, Ministry of Agriculture, and Ministry of Finance. This ministry's responsibilities include planning and financing for climate change mitigation and adaptation towards zero carbon emissions (Sukadri, 2021).

Unfortunately, these targets and regulations have not been accompanied by adequate understanding from the Indonesian public regarding the main climate problems caused by GHGs themselves. Based on a YouGov-Cambridge Globalism Project survey conducted from February to March 2019, it is known that Indonesia is the country with the population most doubtful about climate change (18 percent), followed by Saudi Arabia (16 percent) and the United States (13 percent). The high score of doubt is due to a need for more communication or outreach regarding the urgency of climate change. The impact of climate change is often politicized, such as the problem of flooding being used as a political commodity for leaders' policies and not seen as an impact of climate change (Alaidrus, 2020).

Not only that, the issue of climate change is also often considered a hoax and does not need to be discussed seriously. Research finds that concern for climate change in Indonesia needs to be based on agreement (Hijriah, 2020). However, the issue of zero carbon emissions has unfortunately not been agreed as a priority among the government, mass media, or the younger generation, resulting in ineffective environmental communication. This environmental communication also often uses terms that are difficult for ordinary people to understand, such as global warming, GHG, and zero carbon emissions.

Another obstacle in activating environmental communication in Indonesia is environmental problems that collide with economic problems. People pay more attention to economic issues because they directly impact their lives compared to environmental issues. In recent years, the Indonesian government is considered to be still ignoring environmental problems because it has yet to be able to establish firm policies against environmental damage and has based its attention more on investment interests. Environmental problems should be the basis of policy (Alaidrus, 2020).

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In general, environmental communication has been widely used in various studies, where environmental communication has become a symbolic medium for understanding environmental problems (Cox, 2013). However, considering that environmental problems are so complex, special strategies that are different from communication in general are needed.

Several studies have shown a number of environmental communication methods and strategies, such as environmental crisis communication strategies carried out by governments in each low-emission development sector as a starting point for controlling climate change (Patrianti et al., 2020) , environmental communication campaign activities called ' Mahaguru Sungai' to encourage community participation on river banks (Maulina & Rusli, 2021) , the formation of resilient sub-districts to increase community awareness by interacting with each other in recognizing the potential for disasters (Aldino & Reza Safitri, 2020) , a campaign with the hashtag #StopDirty Palm Oil carried out by Greenpeace Indonesia on Social Media (Riyandani, 2019), the #nostrawmovement campaign via social media to reduce plastic waste (Kusmana & Nurrahmawati, 2020) , persuasive water and energy saving messages delivered through leaflets to create environmentally friendly hotels (Syahputra & Evanita, 2022) , as well as personal communication and mass communication carried out to build public awareness in managing household waste (Cerya & Evanita, 2021) .

Based on the background above, the aim of this research is to explore and further understand the effectiveness of the 'zero carbon emissions' message by analyzing the concepts of zero carbon emissions in Indonesia.

Methods

Approach, Methods, and Research Population

This research uses content analysis techniques with a qualitative descriptive approach. Content analysis is a research tool that focuses on the actual content and internal features of media (Fraenkel et al., 2018). In this research, the author analyzes the theme of media reports regarding 'zero carbon emissions.' The media chosen was Kompas.com as one of the main media choices of the Indonesian people, with the research population selected based on (1) suitability of the theme by looking for articles that contain the words 'zero carbon emissions' and 'zero carbon,' (2) relevance, by taking the news that is directly related to Indonesia, and (3) period, namely in the 2022 time period.

Sample and Research Operations

In its operations, the research began by collecting articles from Kompas.com that contained the keywords 'zero carbon emissions' and 'zero carbon'. From all the articles collected, we found many news stories on the same topic (for example, both about the holding of the BloombergNEF event) but with different points of view. In this situation, the researcher only selects one article to represent the topic, with the selection made based on the completeness of the article content. The selected articles are then grouped into general and special categories. This grouping was carried out to determine the conditions and issues of zero carbon emissions industrially and then compare it with the real actions taken.

Data Processing and Analysis Techniques

Researchers analyzed the type of message content in each article through a literature study to strengthen the analysis results with a theoretical framework. This theoretical framework is believed to help explain the existing problem of zero carbon emissions and how the communication function, symbolic construction, and framing of media narratives on this problem impact the effectiveness of message delivery. The data that has been analyzed is then

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compared with previous research to show suitability and constructive criticism regarding the events that occurred and the implementation of existing theories.

Results and Discussion

Based on researchers' searches on Kompas.com, there are at least 13 articles related to "zero carbon emissions" throughout 2022. Researchers grouped these 13 articles into two main categories: general and specific for further analysis.

General Issues

General issues are articles covering the topic of zero carbon emissions broadly, such as the challenges and opportunities of zero carbon emissions for Indonesia, organizing events or forums that discuss this topic, and recommendations for achieving zero carbon emissions.

Table 1. General issues regarding zero carbon emissions published on Kompas.com in 2022

Date	Article Title
April 20	Welcoming the BloombergNEF Summit, Luhut: Indonesia's Efforts to Achieve Zero Carbon Emissions
April 20	Zero Emissions: Challenges and Opportunities for Indonesia
June 28	How can the property sector achieve its net zero emissions target?
September 13	Luhut and President Director of PLN Discuss Zero Carbon Emissions at IPA Convex 2022
November 10	Property Contributes 40 Percent of Global Carbon Emissions, Here is Advice for Owners

Based on the table above, it is found that two of the five articles that fall into this category specifically discuss how to achieve the zero carbon emissions target from the property sector, the other two articles highlight the holding of international forums in Indonesia (BloombergNEF & IPA Convex, 2022) which discuss environment and zero carbon emissions, as well as the remaining articles providing a broad understanding of the challenges and opportunities of zero carbon emissions in Indonesia.

Special Issue

From the special issue group, researchers include articles that show Indonesia's real actions toward efforts to achieve the zero-carbon emissions target. Of the eight articles found, five were real efforts by the company, while the other three were efforts by the Indonesian government.

Table 2. Special issues regarding zero carbon published on Kompas.com in 2022 (1)

Date	Indonesian Company
April 22	Achieving Zero Carbon Emissions, PLN Intensively Builds Hydro Power Plants
May 25	Chasing Zero Carbon Emissions Target, CarbonX Collaborates with IIF
September 7	Signify Introduces Green Switch Concept, Supports Zero Carbon Emissions Target
November 8	Pertamina Supports Indonesia to Reach Zero Carbon Emissions Target by 2060
November 15	Cutting Carbon Emissions, This Paint Manufacturer Supports Renewable Energy Targets

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Based on the table above, it is found that five companies have shown real action towards Indonesia's journey to achieve the target of zero carbon emissions by 2022. The five companies are (1) PLN, through the construction of hydropower plants that have high efficiency and capacity, can accommodate fluctuations in power load, and have a relatively simple maintenance process; (2) CarbonX – a carbon asset developer from Indonesia – and the Indonesia Indah Foundation through the educational program "I am an Environmental Hero" which invites school students to plant a mangrove tree together, (3) Signify, a company in the lighting sector, through the launch of the green switch concept which invites people to switch from conventional lamps to Light Emitting Diode and connected lighting, (4) Pertamina through reducing non-routine emissions from the use of fuel used by the company, and (5) PT Mowilex Indonesia – producer paint–through the installation of a new solar power installation at its administrative headquarters.

Table 3. Special issues regarding zero carbon published on Kompas.com in 2022 (2)

Date	**Indonesian government**
January 10	Spurring Zero Carbon Emissions by 2060, RI Cooperates on Energy Transition with Japan
March 1	Anies Sets Target for Jakarta to Reach Zero Carbon Emissions by 2050
August 4	Geothermal Energy Continues to be developed so that the Zero Carbon Emissions Target is Quickly Achieved.

Meanwhile, from the Indonesian government's side, the table above shows that three government institutions have also conveyed their progress in supporting Indonesia's zero carbon target. These three institutions are (1) the Ministry of Energy and Mineral Resources, which signed a collaboration on the realization of the energy transition with the Government of Japan, (2) (Former) Governor of DKI Jakarta Anies Baswedan, who started initiating the creation of electric power-based public transportation, and (3) the Director General of Energy New Renewables and Energy Conservation which encourage the development of geothermal power plants thanks to their low emissions, are not affected by weather and are more stable against the influence of fluctuations in fossil fuel prices.

"Zero Carbon Emission" Communication Function

Based on analysis carried out on the content of each article, it was found that the reporting of the 13 articles regarding "zero carbon emissions" in Indonesia tended to use a pragmatic function, with the instrumental aim of informing and educating. In more detail, two of the five articles on general issues – namely those related to holding international forums – are informative, while the other three – talk about challenges, opportunities, and education. Meanwhile, from the special issue category, all existing articles contain an informative aim: focusing on information on the real efforts of companies and governments in achieving the target of zero carbon emissions by 2060.

This finding is quite unfortunate, considering that environmental topics, especially zero carbon emissions, have yet to become the main concern of Indonesian society. Various information content that centers on organizing events and company efforts can be deemed less informative if the main environmental issues still need to be known and understood by the public.

Referring to the environmental communication function (Pezzullo & Cox, 2018), constitutive environmental communication functions can be used more widely in Indonesia. Constitutive environmental communication is a type and function of communication that seeks to build a special perspective, evoke specific beliefs and feelings, and form a certain way of relating to

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other people, thereby creating feelings that can move a person, especially when that person does not or does not yet have a particular subject as "problem."

An example is when global climate scientists try to call world attention to the environmental crisis. They do not just show carbon level figures or mention the issue of carbon emissions but rather convey that "warming could trigger uncontrolled melting of the Greenland ice sheet and other sudden changes, such as the death of the Amazon tropical rainforest" (Team, 2013). This kind of communication can direct public awareness of the potential for climate change and its impacts so that the possibility of this issue becoming a subject of shared understanding is greater.

Symbolic Construction of "Zero Carbon Emissions"

In terms of the symbolic construction of messages containing "zero carbon emissions" in Indonesia, it was found that: (a) Stakeholders in Indonesia – in this case, the government, companies, and the media – use many tropes in building their messages. One of the most commonly used tropes is "zero carbon emissions," which in each article is often used interchangeably with the tropes "zero carbon," "net zero emissions," " net zero emissions, ""carbon neutral," and "carbon emissions." This can further increase audience confusion because none of these tropes are truly as commonly understood as the "motherland" trope; (b) Of the various popular environmental genres, such as apocalyptic, jeremiad, and melodrama, none have been widely used in Indonesia. None of the 13 articles on Kompas.com throughout 2022 used this popular genre. All articles are still centered on general information and education, so this could be one of the reasons why environmental messages in Indonesia still need to be more relevant; (c) In the context of discourse, or the process of changing discourse, which culminates in the practice of using text – language, diction, words, symbols, selecting someone as a source, etc. – and systematically forming the meaning of an object (Long, 2014), which can be found in the article -This article is a discourse on renewable energies such as hydro and geothermal, which are now considered more environmentally friendly and capable of reducing emissions. Meanwhile, regarding "zero carbon emissions" itself, no discourse makes this trope have a clear meaning.

Through the analysis of the symbolic construction above, there is still quite a lot of room for experimentation and development of environmental messaging that Indonesia can do to increase attention to zero carbon emissions.

Media Narrative Framing for "Zero Carbon Emissions"

Regarding the "Media Narrative Framing" communication model, articles in the general issue category have a narrative structure that tends to be clearer: what is the problem, who is responsible, and what is the solution? As an example: a) For articles that describe the holding of international forums, such as " Welcoming the BloombergNEF Summit, Luhut: Indonesia's Efforts to Achieve Zero Carbon Emissions, "the narrative framing that is built: (1) Problem: Indonesia has big homework to achieve global carbon neutrality by 2050 and keep the temperature increase at 1.5 degrees Celsius; (2) Responsible: Indonesian government, global business leaders, and investors in zero carbon platforms. (3) Solution: A net zero energy transition, such as by strengthening the region's transition away from fossil fuels; b)For articles that describe challenges and opportunities, such as " Zero Emissions: Challenges and Opportunities for Indonesia, "narrative framing is built: (1) Problem: Exhaust gas emissions result from every human activity, which leads to carbon footprint, carbon intensity, etc; (2) Responsible: Countries around the world, led by their respective governments; (3) Solution: Renewable energy ecosystem

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Meanwhile, the narrative framing structure in the special issue category needs to be more clearly visible: the solution is comprehensively elaborated, but the problem and who is responsible are not as elaborated. For example, in the article " Pertamina Supports Indonesia to Achieve Zero Carbon Emissions Target by 2060 ", the article focuses on Pertamina, not the issue of zero carbon emissions itself. Starting from how Pertamina has set an emissions reduction target of 30% by 2030, succeeded in reducing greenhouse gas emissions by 7.4 million metric tons of carbon dioxide in 2021, successfully reduced non-routine emissions by up to 69.7% through more efficient equipment, and has developed a holistic strategy to achieve zero carbon emissions: decarbonization of business activities as well as the development of new green businesses.

Considering how articles on special issues dominate the mass media in terms of intensity, this could be another reason why the issue of zero carbon emissions is still less popular in Indonesia - because the articles that dominate show more positive value (can be considered as activities promotion) of the company rather than the main issue related to zero carbon emissions itself.

Public beliefs, choices, and behavior regarding the environment are formed, shared, and assessed through communication. Whatever "environment" is intended, it is closely tied to how audiences interact, understand, and respond to the larger world. One Norwegian environmental expert once said, "Having directly experienced avalanches at least twice, I have never experienced avalanches as a social construct. However, every word I say about it, could have a social origin." This shows the importance of building messages highly relevant to the audience in environmental communication, including environmental communication conveyed in mass media.

Several previous studies have raised the topic of zero carbon emissions, such as "The Influence of Media Exposure, Company Size, Profitability and Leverage on Carbon Emission Disclosure in Manufacturing Companies Listed on the Indonesia Stock Exchange for the 2014-2018 Period" (Septriyawati & Anisah, 2019) and " Analysis Factors that influence Carbon Emission Disclosure in Companies in Indonesia" (Jannah & Muid, 2014) have revealed that media exposure does have a significant effect on carbon emission disclosure. This further emphasizes the important role of the media in increasing awareness and even behavior towards environmental issues. That is why the narratives built-in reporting about zero carbon emissions in Indonesia need to be designed in such a way that they can educate and mobilize the public.

Unfortunately, based on this research, the symbolic construction built on the topic of zero carbon emissions is not yet in line with the recommendations for effective environmental communication concepts (Pezzullo & Cox, 2018): There is no constitutive function, there is a lack of consistency in using tropes, and there is no use of popular genres. , there is no continuous discourse to promote the issue, and it has not touched the crucial point of the issue at hand - what is zero carbon emissions, what is its relevance for Indonesia, what is the real impact on Indonesia (both what has happened and has the potential to happen), what is the urgency for immediate action, and how each member of society; Not only governments and companies can participate in achieving this zero carbon emissions target.

This type of reporting still focuses on government and company efforts, which is less relevant to the wider audience. This can occur, among other things, because 1) So far, government directives and regulations regarding the participation of elements of society in achieving the target of zero carbon emissions are still focused on the scope of government and business, and 2) Disclosure of carbon emissions has a positive effect on financial performance, operational performance, and company value; where the lower the carbon emissions a company produces, the better their financial performance, operations, and company value. Not only that, the

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company's cost of equity has also decreased thanks to investors' trust in companies that are believed to be more environmentally friendly (Kelvin et al., 2017). Meanwhile, from the general public's perspective, specific relevance has yet to be found between achieving the zero-carbon emissions target and the situation or needs of the public in Indonesia. If we refer to the climate issue communication guidelines issued by the UN, the messages that are constructed need to 1) use information based on science, 2) convey problems and solutions in simple language that provides motivation and hope, and 3) mobilize action for change (Ridho, 2022).

It is important to remember that, in principle, all human communication is a symbolic act. As humans, symbolic actions occur because we create and use symbols to form an understanding and meaning of something to attract other people's attention. Media such as mass media, films, websites, applications, and photos produced by us for us, are also a means of forming and conveying human symbols. Therefore, the selection and construction of symbols in environmental communication is very important.

Apart from symbolic construction, another approach that can be explored further in relation to enlivening the issue of zero carbon emissions is the use of the public sphere. The public sphere is a discursive space where different voices on environmental issues emerge as the basis of democratic life (Pezzullo & Cox, 2018). In other words, apart from mass media, messages with consistent symbolic construction also need to be conveyed intensively in the public sphere in order to encourage discussion and differences of opinion that can increase the resonance of this issue. As the public sphere recognizes the diverse voices and styles that characterize a strong participatory democracy, there is a need for different conversations on social media, public hearings, local meetings, community activities, blogs/opinions, etc., that address the issue of zero carbon emissions.

Conclusion

Environmental issues, such as zero carbon emissions, are issues that require Penta helix collaboration to solve them. Environmental communication – one of which is environmental communication through mass media – also plays an important role in building awareness, increasing urgency, and mobilizing audiences to take a strategic position on this issue jointly. To build effective environmental communication, clear, focused, and consistent symbolic construction is needed, with a message approach adapted to the target audience's context. In the Indonesian context, where the public still needs to understand and give importance to environmental issues because other issues are more critical in their lives, such as the economy, the communication approach that needs to be developed first is from a constitutive side. This message construction and approach can then be implemented in the mass media and the public sphere in various formats, one of which is popular culture, such as films. Referring to expert views, three stages need to be developed to increase the effectiveness of environmental communication messages: 1) Alert – notify, remind, or convey an environmental problem. 2) Amplify – utilize various offline and online platforms to convey the message, and 3) Engage – involve different stakeholders to share this environmental message (Pezzullo & Cox, 2018). This stage is worth considering in amplifying environmental messages in Indonesia. Indeed, this research is still limited to research on mass media and uses a fairly small sample, namely one media (Kompas.com) within a narrow period (one year). However, it is hoped that the results obtained can become an initial basis for further research regarding how Indonesia can increase the urgency of environmental issues through symbolic construction and effective packaging of environmental messages in various media and the public sphere.

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