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Resonance of Climate Crisis News Discourse in Indonesian Online Media: Reflections on Niklas Luhmann's Ecological Communication Theory Perspective

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ABSTRACT

Indonesia, an archipelago significantly vulnerable to the climate crisis, faces numerous natural disasters impacting various sectors. Despite the critical need for public awareness and proactive measures, media coverage of climate crisis issues in Indonesia remains limited. This study investigates the level of resonance in online media reporting on the climate crisis from January to December 2023, focusing on keywords related to climate change, forest fires, and air pollution. The research uses topic modeling and Niklas Luhmann's systems theory to examine how four major Indonesian online media outlets address climate crisis issues. The findings reveal that while Kompas.com and Detik.com show consistent coverage, ANTARA and CNBC Indonesia place less emphasis on these topics. The study highlights the need for enhanced and more impactful media coverage to raise public awareness and drive meaningful action against the climate crisis. The results underscore the importance of media collaboration with governments, NGOs, and communities to increase the resonance of climate crisis issues in public discourse. Future research should explore the reasons behind the variation in media coverage and its impact on public perception and policy decisions, including the role of social media platforms.

INTRODUCTION

Indonesia, an archipelago situated on the equator, is significantly vulnerable to the climate crisis (Novita, 2021). This crisis poses a serious threat to various aspects of life in the country, leading to numerous natural disasters. These disasters include droughts, forest and land fires, floods, landslides, sea level rise, and extreme weather events (Kusumawardhani & Gernowo, 2015; Novita, 2021). The repercussions of these events are extensive, causing substantial losses across multiple sectors. According to the Indonesia Environmental and Climate Change Policy Brief 2008 by the Swedish International Development Agency (SIDA), the climate crisis impacts several sectors in Indonesia, including the socio-economic sector, transportation, agriculture, health, and industry.

The hazards and threats posed by the climate crisis underscore the critical need for public awareness and proactive measures to find solutions. It is essential to implement concrete actions and devise short-, medium-, and long-term plans to safeguard the public and mitigate future losses. Addressing the climate crisis requires promoting measures such as reducing greenhouse gas emissions, enhancing energy efficiency, and supporting renewable energy sources (Legionosuko et al., 2019). Furthermore, sustainable policies in natural resource management are imperative. The collective awareness and action of society will play a crucial role in overcoming the climate crisis, ensuring the future safety and sustainability of human life. However, a survey conducted by the YouGov-Cambridge Globalism Project indicates that public awareness of climate change in Indonesia remains low. Among the 23 countries studied, Indonesia has the highest percentage of people who do not believe in climate change (18%), surpassing Saudi Arabia (16%) and the United States (15%) (Wahyudin et al., 2022).

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In addition to technical policies, the media plays a vital role in raising awareness about the dangers of the climate crisis. Wahyuni's (2019) research highlights the media's power to disseminate information to the public, thereby increasing awareness and knowledge about climate crisis issues. Mass media functions as a primary vehicle for distributing information, opinions, and values to a wide audience. It significantly influences public opinion, shaping how people perceive critical issues and facilitating relationships among individuals, groups, and institutions within society (Artieri & Gemini, 2019). The public's level of awareness and understanding of climate crisis issues significantly impacts their perceptions and actions. Consequently, addressing the climate crisis effectively requires more than just technical policies. Efforts to mitigate the impact of the climate crisis are closely linked to communication strategies, particularly how the media reports on these issues (Arifudin et al., 2020; Wahyuni, 2017).

The shift to digital platforms has transformed the way people consume news, supported by the media industry's expansion of online coverage to reach a broader audience (Salim et al., 2021). As of January 2023, there are 1,711 verified media companies in Indonesia, with 902 operating as online media (Rizaty, 2023). Despite this growth, the climate crisis remains less prominent compared to other public issues, particularly within internet media (Alaidrus, 2022; Wahyuni, 2017). Alaidrus (2022) notes that discussions and campaigns about climate issues remain confined to specific groups, such as the middle class and academic circles. The media faces significant challenges in effectively communicating information about the climate crisis, especially to those most vulnerable and with limited access to information, including lower-income groups, indigenous peoples, and other marginalized communities. Addressing the climate crisis necessitates collective action, with the media playing a crucial role in raising public awareness. It is imperative for the media to present the topic of climate change in a manner that engages the general public and promotes widespread awareness.

Research indicates that the lack of coverage of the climate crisis in online media is linked to the intricate relationship between ecological problems and the complexity of social systems. The climate catastrophe encompasses multiple facets, including science, politics, economics, and social issues, challenging to condense into brief news segments suitable for online media (Arifudin et al., 2020; Wahyuni, 2017). A study by Lembaga Bantuan Hukum (LBH) Pers, detailed in their book "Media and Climate Change," identifies media economics as another factor contributing to the inadequate coverage of climate crisis issues. Climate crisis topics are less likely to attract large audiences and are perceived unprofitable for online media outlets. Furthermore, environmental issues often receive minimal coverage due to journalists' limited awareness and understanding of these topics (Pandu, 2022; Wahyudin et al., 2022).

The ecological communication theoretical framework proposed by Niklas Luhmann underscores the importance of recognizing the dangers posed by the climate crisis as a critical environmental issue contemporary society faces (Wahyuni, 2019). Luhmann's concept of ecological communication evaluates environmental problems through the lens of systems theory, highlighting communication as the most vital component of society's social system. According to Luhmann, communication is essential for society to address environmental challenges, serving as the primary method for understanding the complexities of these issues (Luhmann, 1989).

Communication is a key aspect that can elicit responses from the social system. A well-executed communication process is a reassuring tool that can help reduce complexity, while poor communication quality can increase it (Luhmann, 1989; Wahyuni, 2021). Effective communication skills enable individuals to respond to complex challenges and activate social system resonance, including addressing the multifaceted nature of the climate crisis. Society, as a system, will strive to adapt and survive by emphasizing, preferring, and replicating the core values and behaviors that define it (Miller, 2022). According to the ecological communication paradigm, each individual must comprehensively understand ecological challenges (Arifudin et al., 2020). Ecological communication encompasses the management of existing environmental problems and the awareness of environmental threats and challenges (Arifudin et al., 2020; Rochyadi-Reetz & Wolling, 2023; Wahyuni, 2017, 2019).

Given the previously mentioned problems and challenges of reporting climate crisis issues in online media, providing comprehensive coverage of the issue is crucial. Effective and meaningful communication can stimulate sensitivity and system reactions (Griffin et al., 2019; Wahyuni, 2021), which includes improving the quality of news content about the climate crisis in online media. When the construction of meaning is conveyed through accurate and effective information and communication, individuals are better equipped to respond to environmental difficulties with increased sensitivity. This perspective underscores the importance of media discourse in enhancing public awareness of climate disaster issues.

The term resonance in ecological communication refers to how communications respond to the risks or disruptions generated by the environment. Insufficient resonance regarding the climate crisis within a community can lead to significant environmental hazards, as the community may lack the understanding and expertise needed to effectively respond to the problem. Conversely, excessive resonance can also be problematic. Intense resonance might result in rigid societal structures that are resistant to change (Wahyuni, 2019).

Based on the previous description, this study aims to empirically investigate the level of resonance of online media in Indonesia in reporting the discourse of climate crisis issues, as well as how online media in Indonesia are reporting these issues. The study's results are expected to provide practical implications for addressing climate crisis issues through

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the lens of communication. Additionally, the findings will offer insights into what the media needs to improve coverage and discourage neglect of climate crisis topics. This research seeks to contribute to the development of more effective communication strategies that can enhance public awareness and engagement with environmental challenges.

METHOD

The data for this study were gathered from a sample of the four most accessed online media outlets in Indonesia in 2023, identified using analysis sites pro.similarweb.com and Pahlevi (2022). The selected media outlets are Detik.com, kompas.com, cnbcindonesia.com, and antaranews.com. The Beautiful Soup Python module was utilized for data extraction from these news portals, converting HyperText Markup Language (HTML) content into a more readable format (Abodayeh et al., 2023).

Given the complexity of the climate crisis, which is intertwined with various issues, the research will focus on several key topics. In the initial phase, the researcher will observe specific keywords related to the causes of the climate crisis as presented in the online media. The selection of keywords is informed by the Greenhouse Gas Inventory Report published by the Ministry of Environment and Forestry. Based on these observations, three keywords were selected: climate change, forest fires, and air pollution. The research scope is limited to online news published from January to December 2023. A search using these keywords yielded 3,103 news items with headlines containing the terms *"krisis iklim"* (climate crisis), *"perubahan iklim"* (climate change), *"kebakaran hutan"* (forest fires), and *"polusi udara"* (air pollution).

The study employs topic modeling, a data analysis method that identifies implicit or hidden topics within specific textual sources. A topic is defined as a collection of commonly used words pertinent to each text. Topic modeling enables researchers to group these keywords based on their coherence with one another, clustering certain topics together. Machine learning-based statistical and probability computations are then used to assign these topic clusters to each document based on how well the clusters match the word order in the associated text (Nikolenko et al., 2017). This study utilizes topic modeling based on the non-negative matrix factorization (NMF) method. The NMF method identifies semantic features in documents and groups them into clusters based on these features (Alfajri et al., 2022). The researcher implemented the NMF technique using the Sci-kit Learn Python package.

Researchers perform a series of data processing steps before implementing NMF. These steps include case-folding, tokenizing, filtering, and word stemming (Alfajri et al., 2022). Following these steps, feature extraction is conducted. Feature extraction in this study involves creating the term frequency-inverse document frequency (TF-IDF), representing documents based on word frequency across a set of documents (Alfajri et al., 2022). The NMF analysis is then based on the TF-IDF results.

The topic modeling process involves a manual test to determine the number of topics with the highest coherence score, which measures the degree of semantic similarity between words. A higher coherence score indicates better matching pairs between topic-forming keywords, leading to more accurate topic modeling (Maskat et al., 2023; Zoya et al., 2021). This study uses the c_v measurement technique through the Gensim library in the Python package, ensuring the selection of the most coherent topics for analysis.

Researchers began testing the calculation of coherence scores, starting with two topics. The number of topics was then incrementally increased by 1 until 30 topics were tested. Figure 1 illustrates that the six-topic trial achieved the highest coherence score. Table 1 displays the set of keywords that constitute each topic.

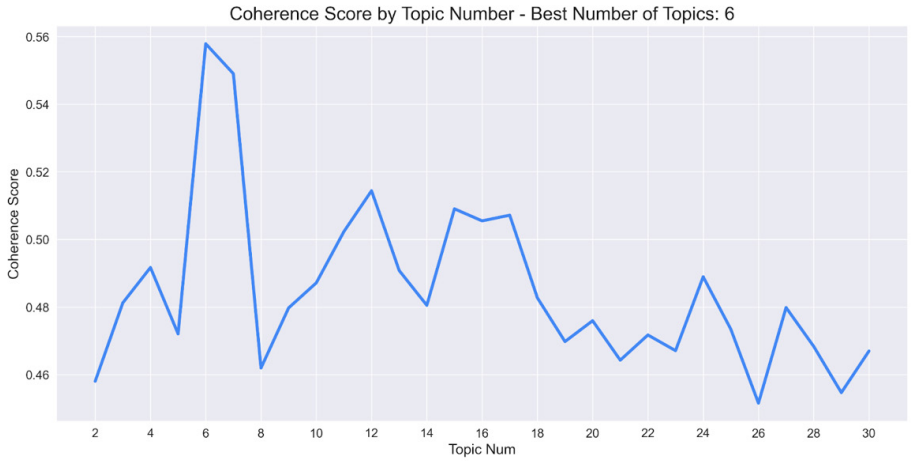

Fig 1. Coherence Score by Topic Number

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Figure 1 shows that the maximum coherence score in the researchers' experiments was achieved with six topics. This indicates that the NMF algorithm effectively groups words into clusters that make the most sense, such as terms related to "air pollution" or "global warming." By categorizing all the unique words in the document sources into six groups, researchers can better understand how words are employed in the context of specific themes.

Table 1. Interpretation of Topic Modelling Result Keywords

Topic Number	Topic Keywords
1	air, pollution, healthy, ill, lung, child, breath, quality, expose, cause, risk, particles, pollutant, pm, bad, space (*udara, polusi, sehat, sakit, paru, anak, napas, kualitas, papar, sebab, risiko, partikel, polutan, pm, buruk, ruang)*
2	climate, change, heat, temperature, impact, global, sea, earth, world, human, water, thorough, country, threat, level *(iklim, ubah, panas, suhu, dampak, global, laut, bumi, dunia, manusia, air, teliti, negara, ancaman, tingkat)*
3	burn, forest, fire, extinguish, land, mountain, police, task, point, region, area, location, district, citizen, area, village (bakar, hutan, api, padam, lahan, gunung, polisi, tugas, titik, wilayah, luas, lokasi, kabupaten, warga, kawasan, desa)
4	indonesia, country, energy, minister, emissions, environment, business, president, economy, Jokowi, carbon, electricity, command, industry, commitment, forest, work, support (Indonesia, negara, energi, menteri, emisi, lingkungan, usaha, presiden, ekonomi, Jokowi, karbon, listrik, perintah, industri, komitmen, hutan, kerja, dukung)
5	video, picture, seconds, content, listen, read, Jokowi, break up, burn, forest, minister, city, country, governor, pollution, information (video, gambar, detik, content, simak, baca, Jokowi, putus, bakar, hutan, menteri, kota, negeri, gubernur, polusi, informasi)
6	city, Jakarta, region, air, vehicle, quality, command, pollution, province, motor, test, transportation, dirty (kota, Jakarta, daerah, udara, kendaraan, kualitas, perintah, polusi, provinsi, motor, uji, transportasi, cemar)

Source: Processed Data

FINDINGS AND DISCUSSION

Between January and December 2023, an analysis of coverage across four online media news portals using several keywords related to the climate crisis (climate change, forest fires, and air pollution) revealed that kompas.com consistently addressed issues related to the climate crisis, followed by Detik.com. The evolution of news coverage of the climate crisis in 2023 shows a general increase each month. Climate crisis issues received less media coverage at the beginning of the year compared to mid-year and year-end.

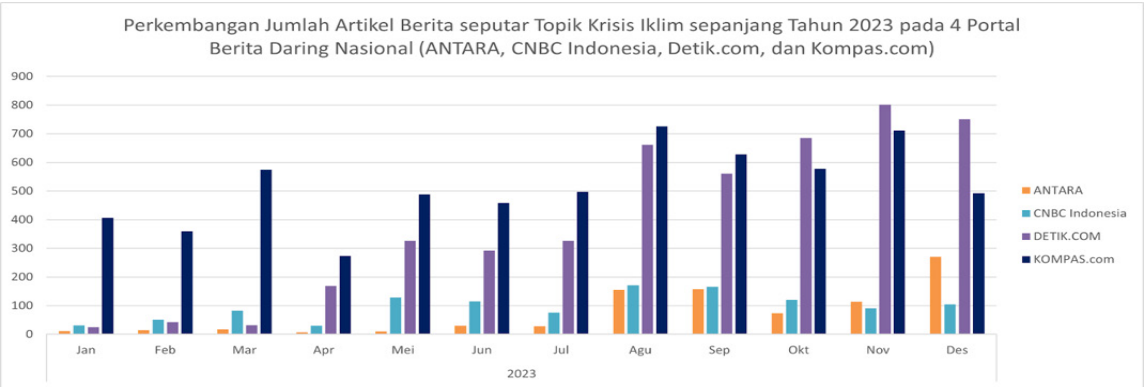

Fig 2. Climate Crisis News Articles in 2023

Based on the data presented in Figure 2, news coverage of the climate crisis began to increase in the middle of the year, particularly from July to August 2023. During this period, the media extensively reported on the climate crisis and environmental problems, largely due to the severe pollution in Jakarta, which became a significant topic of discussion among netizens and a focal point in media coverage. In July 2023, according to IQAir data, Jakarta's average daily air quality was predominantly unhealthy, which utilizes the Air Quality Index United States (AQI US) as a reference. This index measures the air quality of each region. During this time, Jakarta's air quality was often in the orange and red zones, with scores ranging from 113 to 146 points, indicating unhealthy air for sensitive groups (Faruq, 2023; Santika, 2023). Online media articles also highlighted the impact of poor air quality on health issues, including respiratory diseases, cardiovascular diseases, and skin health. Additionally, air pollution can harm the environment by damaging plants, water,

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and soil. It also affects citizens' productivity and quality of life and increases the risk of natural disasters.

News about the climate crisis also increased at the end of the year, coinciding with the agenda for the 2024 elections. During this period, presidential and vice-presidential candidates presented their environmental programs and visions, making it a focal point of media coverage. The climate crisis became a prominent issue during the election period due to growing public awareness of the severe impacts of climate change, particularly among the younger generation. The government began to show a stronger commitment to addressing environmental issues in line with the global trend towards recognizing the need for concrete action on the climate crisis. Some political parties adopting green policy agendas further heightened attention to these issues during election campaigns. Elections provide a platform for candidates to express their views and propose solutions to the climate crisis, which becomes a significant factor for voters in choosing leaders who are expected to bring positive changes in environmental protection.

During the election period, news coverage emphasized that the climate crisis is not solely an environmental issue but is also deeply intertwined with socio-political factors. Governments play a crucial role in shaping policies related to environmental issues, such as carbon emission regulations, renewable energy incentives, and conservation efforts. To effectively cover the government's environmental policies, it is essential to analyze their effectiveness, potential impacts on various stakeholders, and their contribution to addressing or exacerbating the climate crisis. Highlighting the challenges associated with these policies, such as economic trade-offs or resistance from vested interests, is also critical. This comprehensive approach helps foster informed public discourse. A socio-political perspective on climate crisis information entails considering the broader societal and political contexts in which environmental issues exist.

However, with the increased coverage of the climate crisis issue related to the 2024 elections agenda, it is evident that it is not treated as a stand-alone issue within media discourse. This observation is particularly notable in the early stages of 2023, where news coverage tends to downplay or underemphasize the climate crisis in the absence of immediate, headline-grabbing events. The climate crisis is often overshadowed by other topical issues, relegating it to the background of public awareness. This lack of independent recognition of the climate crisis raises questions about the broader understanding and acknowledgment of its severity and the need for a dedicated focus in media reporting.

A. Interpretation of Topic Modelling Result Keywords

Topic modeling enables researchers to gain an overview of the main themes within textual documents. In this context, a topic is a collection of keywords or phrases that frequently appear together in a set of documents and exhibit semantic coherence. This research identified six keyword clusters through topic modeling. Based on the keywords that constitute each cluster, these clusters can be summarized into six distinct topics.

Table 2. Interpretation of Topic Modelling Result Keywords

Topic Number	Topic Keywords
1	air, pollution, healthy, ill, lung, child, breath, quality, expose, cause, risk, particles, pollutant, pm, bad, space (*udara, polusi, sehat, sakit, paru, anak, napas, kualitas, papar, sebab, risiko, partikel, polutan, pm, buruk, ruang)*
2	climate, change, heat, temperature, impact, global, sea, earth, world, human, water, thorough, country, threat, level *(iklim, ubah, panas, suhu, dampak, global, laut, bumi, dunia, manusia, air, teliti, negara, ancaman, tingkat)*
3	burn, forest, fire, extinguish, land, mountain, police, task, point, region, area, location, district, citizen, area, village (bakar, hutan, api, padam, lahan, gunung, polisi, tugas, titik, wilayah, luas, lokasi, kabupaten, warga, kawasan, desa)
4	indonesia, country, energy, minister, emissions, environment, business, president, economy, Jokowi, carbon, electricity, command, industry, commitment, forest, work, support (Indonesia, negara, energi, menteri, emisi, lingkungan, usaha, presiden, ekonomi, Jokowi, karbon, listrik, perintah, industri, komitmen, hutan, kerja, dukung)
5	video, picture, seconds, content, listen, read, Jokowi, break up, burn, forest, minister, city, country, governor, pollution, information (video, gambar, detik, content, simak, baca, Jokowi, putus, bakar, hutan, menteri, kota, negeri, gubernur, polusi, informasi)
6	city, Jakarta, region, air, vehicle, quality, command, pollution, province, motor, test, transportation, dirty (kota, Jakarta, daerah, udara, kendaraan, kualitas, perintah, polusi, provinsi, motor, uji, transportasi, cemar)

Source: Processed Data

Based on the Table 2, the first keyword cluster can be concluded to form a topic in the dimension of "Air pollution risks threatening children's respiratory health." The second keyword cluster can be inferred to form a topic in the dimension of "Temperature increase due to climate change and global warming threatens ocean conditions." The third keyword cluster can be inferred to form a topic in the dimension of "The threat of forest fires in several rural areas in Indonesia and the efforts of the authorities to extinguish them." The fourth keyword cluster forms a topic: "The

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government seeks the use of environmentally friendly energy (electricity) to reduce carbon emissions." The fifth keyword cluster forms a topic in the dimension of "In-depth coverage (in multimedia format) of the government's response to forest fires causing pollution." The sixth keyword cluster forms a topic in the dimension of "The government seeks a feasibility test for motorized vehicles as a response to the level of air pollution in Jakarta." The following Table 3 summarizes the distribution of each topic dimension across the 3,103 news documents in this study:

Table 3. Number of Topic Modelling Result Keywords

Topic Number	Antara	CNBC Indonesia	Detik.com	Kompas.com	**Grand Total**
1	58	39	344	152	593
2	87	39	430	164	720
3	92	32	338	117	579
4	144	74	264	105	587
5	0	7	103	1	111
6	85	52	179	197	513
Grand Total	466	243	1658	736	3.103

Source: Processed Data

Online media in Indonesia tend to cover the climate crisis with varied approaches. Based on observations, this study's four online media outlets present news articles, investigative reports, and opinions from experts and notable figures about the climate crisis. Their coverage spans various aspects, including the impact of the climate crisis on the environment, changes in weather patterns, the availability of natural resources, and action plans to mitigate its negative effects. The topic modeling results reveal that one of the four online media outlets extensively covers topics related to climate change, focusing on keywords such as heat, temperature, impact, global, sea, earth, world, human, water, research, country, threat, and level (iklim, ubah, panas, suhu, dampak, global, laut, bumi, dunia, manusia, air, teliti, negara, ancaman, tingkat). This outlet often features infographics, videos, and articles that visually depict the climate crisis and environmental issues, making the information more accessible and engaging for the audience. Other media outlets also adopt a socio-political approach to climate crisis information, covering government policies related to environmental issues and highlighting the associated challenges and solutions.

The depth of information about the climate crisis presented in four Indonesian online media varies. Generally, most articles provide only superficial information about broad issues related to climate change and current events such as weather changes, air pollution, and forest fires. However, some articles delve deeper, discussing more specific and detailed impacts, outlining proposed solutions, and highlighting innovations and concrete actions to address the climate crisis. Certain online media even offer series or special reports that provide in-depth analysis of specific aspects of the climate crisis, such as deforestation, renewable energy, or environmental policy. These comprehensive pieces aim to inform readers more thoroughly about the nuances and complexities of these issues. Despite these efforts, there is still room to deepen the scope of information on the climate crisis. Expanding the depth and breadth of coverage can provide readers with a more comprehensive understanding and encourage further action on the issue.

B. The Concept of Resonance Based on Niklas Luhmann's Systems Theory

Niklas Luhmann's system theory offers a comprehensive framework for understanding society as a network of self-organizing function systems, each operating according to its own logic and values. Central to Luhmann's theory is autopoiesis, which underscores these systems' self-referential and self-sustaining nature. Communication is pivotal in Luhmann's theory, facilitating interactions and coordination among function systems. This theory provides profound insights into the complexities of social organization, emphasizing the interplay between systems, communication processes, and their adaptation to environmental stimuli (Hall et al., 2017).

According to Luhmann's systems theory, resonance refers to a system's ability to respond to relevant environmental stimulation that impacts multiple function systems within society, leading to coordinated responses and adaptive solutions (Hall et al., 2017). Weak resonance can negatively impact a system; if a system lacks resonance, it may not be able to adapt to environmental changes, resulting in a lack of flexibility and responsiveness (Clark, 2020). In this context, the low resonance of climate crisis issues in online media diminishes the sensitivity or responsiveness to these issues. This lack of resonance makes the system rigid and unable to effectively address and adapt to environmental changes.

Niklas Luhmann's systems theory views communication as a social system's response to its environment (Wahyudin et al., 2022; Wahyuni, 2019). This perspective presents both opportunities and challenges for communication science, particularly in exploring the climate crisis phenomenon in more critical and detailed terms. Through Luhmann's theory, we can examine how the social system communicates disaster issues, including what is communicated about the

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climate crisis, whether society effectively explores potential environmental dangers related to the climate crisis, and how the social system resonates in responding to disasters (Wahyuni, 2019).

From a communication perspective, online media plays a crucial role in conveying the narrative of the climate crisis. Previous studies have shown that media coverage of the climate crisis can significantly affect public perceptions by shaping how the issue is framed. This, in turn, influences attitudes and behaviors, gradually increasing awareness of climate risks and eliciting responses to policies (Guenther et al., 2023; Kleinberga, 2022; Twyman-Ghoshal et al., 2022; Vikström et al., 2023). Given the importance of media coverage to public understanding and action, comprehensive and consistent media coverage of the climate crisis is essential.

The research findings indicate that media coverage of the climate crisis in Indonesia fluctuates, influenced by various factors such as news events. The emergence of the climate crisis in four Indonesian online media in 2023 reflects societal issues but may not always emphasize solutions, potentially limiting the scope of awareness and action. According to Niklas Luhmann's systems perspective, a lack of sensitivity to climate crisis issues can hinder the adoption of necessary measures to mitigate the effects of the climate crisis. This can be interpreted as the system being insensitive to important environmental cues or information. Consequently, the system becomes less responsive, less able to change its operations, and less flexible in dealing with new situations. As a result, the system may fail to adapt to critical external changes, which could ultimately threaten its stability and ability to survive (Clark, 2020; Wahyuni, 2017). This could lead to delays in making key decisions, implementing appropriate policies, or developing effective solutions. Therefore, online media must expand its coverage of the climate crisis to increase public awareness and understanding of the issue. This initiative aims to ensure that the public is better informed and empowered to respond to mitigate the effects of climate change.

C. Challenges in Reporting Climate Crisis Issues in Online Media

The lack of coverage of climate crisis issues in Indonesian online media is not coincidental but stems from various challenges contributing to its weak resonance. One of the primary challenges is the difficulty journalists face in covering climate crisis issues, which they find sufficiently complex to address. The complexity of the climate crisis demands that journalists dedicate considerable time and cognitive effort to grasp and articulate these issues effectively. Concurrently, journalists within online media are often pressured to produce a large volume of daily news to increase page views, significantly influencing economic gains from advertisements (Wahyudin et al., 2022).

Within the theoretical framework of general social systems theory, Niklas Luhmann characterizes the mass media as a distinct function system that is self-referential and autopoietic, operating through multiple mass communication channels. The complexity of the media landscape, as described by Luhmann's theoretical system, involves various interrelated factors that shape the production, distribution, and consumption of information in today's digital age. These complexities arise from the rapid evolution of technology, the growth of digital platforms, and the diversification of media content sources (Artieri & Gemini, 2019). Given these complexities, many journalists face significant challenges. The fast-paced nature of modern media and the need to produce a high volume of content to maintain economic viability through advertisements leaves journalists with limited time and energy to delve into complex issues such as the climate crisis. Consequently, they often rely heavily on press releases or conferences for reporting.

This situation is exacerbated by the inadequate distribution of knowledge related to the climate crisis. Research on this issue is often presented in formats that are not easily comprehensible for journalists, whether they are inexperienced or familiar with the topic (Wahyudin et al., 2022). Additionally, another challenge in reporting the climate crisis in online media lies in the issue's comparatively "unsexy" nature. Climate crisis reporting tends to be less popular and fails to attract as many clicks from news consumers compared to other topics. Given the media industry's focus on generating high numbers of clicks for economic gain, the climate crisis issue receives less frequent coverage.

From the data shown for January to December 2023, it was found that there are still fewer articles specifically discussing the climate crisis compared to other topics, such as corruption and elections. Additionally, when compared to other keywords based on the highest searches on Google Trends in 2023, namely "pinjol" (online loans) and "online gambling," news about the climate crisis remains less prominent. News about the climate crisis gained more attention only in August 2023, during the Jakarta pollution issue, when it was highlighted by many media outlets and netizens.

In addition to challenges associated with internal matters related to the need for online media reporting in Indonesia, several external factors are linked to how the media industry is significantly influenced by the country's climate change policy (Gavin, 2009). The media industry in Indonesia is entangled in the lack of attention from political parties, largely due to the country's oligarchic political economy structure (Wahyudin et al., 2022). This oligarchic network within Indonesia's political system has given rise to the Omnibus Law. This law is criticized by several environmental organizations and is deemed to prioritize investment at the expense of perpetuating corporate crimes, violating labor rights, and posing environmental hazards (Arumingtyas, 2020). This challenge is concerning because media entities should ideally adhere to journalism standards by presenting balanced news, verifying information, and maintaining objectivity (Prastya et al., 2022).

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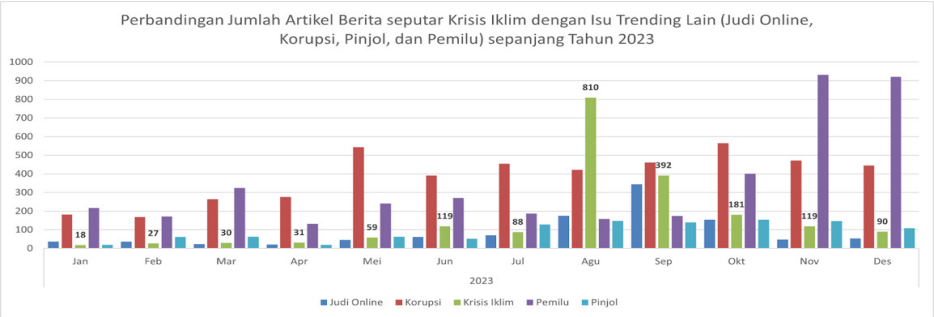

Fig 3. Comparison of Climate Crisis News Coverage with Other Issues in 2023

Furthermore, journalists and media in Indonesia are not immune to attacks and potential criminalization. In 2019, the Legal Aid Institute for the Press (LBH Pers) recorded at least nine cases involving journalists covering environmental issues (Wahyudin et al., 2022). The enactment of the Omnibus Law and the management of COVID-19 led to a significant increase in violence against journalists in 2020, totaling 71 cases (Wahyudin et al., 2022). The political oligarchy, violence, and criminalization of journalists pose unique challenges that undermine the overall quality of environmental coverage, particularly regarding the climate crisis. The political oligarchy makes the media vulnerable to interventions driven by business interests, while violence and criminalization leave journalists in a precarious and risky position when covering environmental crimes. These critical issues must be addressed to advance the mainstreaming of public awareness regarding the climate crisis. Reviewing and strengthening policies related to media protection in covering environmental issues, particularly the climate crisis, is essential. Given that the media is a crucial medium for the public to understand reality and foster collective awareness (Yustitia & Ashrianto, 2022), ensuring the safety and independence of journalists is imperative for robust and unbiased reporting.

CONCLUSION

Our analysis of coverage across four major Indonesian online media outlets using terms related to the climate crisis (climate change, forest fires, and air pollution) from January to December 2023 revealed that kompas.com consistently addressed these issues, followed by Detik.com. In contrast, ANTARA and CNBC Indonesia showed less emphasis on climate crisis issues. Despite these efforts, the coverage of climate crisis issues in the four major Indonesian online media generally remains weak in resonance and is often overshadowed by other issues. This weak resonance indicates that climate crisis reporting does not capture sufficient public and media attention to drive significant awareness and action. This result leads us to conclude that there is still a significant need for increased and more impactful coverage of climate crisis issues in online media.

The climate crisis requires comprehensive and informed media coverage to raise awareness, foster understanding, and drive meaningful action. The media plays an essential role in shaping public perceptions, influencing policy decisions, and mobilizing collective efforts to address the significance of the climate crisis. By providing accurate, accessible, and compelling information, the media can build a well-informed society better equipped to make environmentally conscious choices, hold leaders accountable, and actively participate in the global conversation on climate crisis mitigation and adaptation. Therefore, to bring about these contributions, there is a need for even greater resonance in online media coverage of climate crisis issues. Responsible and impactful media reporting of the climate crisis emerges as a powerful tool in shaping a sustainable future for our planet. Collaboration between online media, governments, non-governmental organizations, and communities is essential to increase the resonance and response to climate crisis issues.

From the findings of this study, we also suggest that further research could explore the reasons behind the variation in media coverage of climate crisis issues and its impact on public perception and policy decisions. Investigating the role of social media platforms in amplifying or mitigating climate crisis coverage could also be valuable. Additionally, longitudinal studies beyond 2023 would provide insights into long-term trends and changes in media resonance regarding the climate crisis. Broadening the scope to include other forms of media beyond online platforms would offer a comprehensive understanding of climate crisis coverage across different media landscapes.

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